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STATISTICAL AND HISTOLOGIC STUDIES OF FORDYCE'S DISEASE *

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LITERARY REVIEW

In 1896, Fordyce [1] reported Fordyce's disease as a peculiar affection of the mucous membrane of the lips and oral cavity; it has now become well known. Fordyce found spots in nearly every case examined, varying in extent from a few bodies confined to the lips to an involvement of both labial and buccal mucous membranes; both conditions were found in persons who were and who were not related. The younger the person affected, the larger and more grouped were the bodies. As the subject grew older the bodies became more numerous, and judging from their smaller size, underwent atrophy. They were not remarked before puberty and occurred regardless of sex. In most cases a seborrheic eczema was associated. The most important microscopic changes consisted in a degeneration of an unknown nature in the epidermal cytoplasm, and Fordyce was inclined to attribute the affection to this—not to sebaceous glands.

Montgomery and Hay,[2] in 1897, were the next contributors to our knowledge of this condition. They disagreed with Fordyce and believed that age apparently did not play any important part, for while the condition was mostly seen in adults, yet once at least they observed the spots in an infant. The microscopic examinations of sections from two of the cases showed typical sebaceous glands.

Allen,[3] in 1897, presented one case, and in discussion Fordyce said that since writing his paper he had seen additional cases, and in one

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1. Fordyce, J. A.: A Peculiar Affection of the Mucous Membrane of the Lips and Oral Cavity, J. Cutan. Dis., 1896, p. 413.

2. Montgomery, D. W., and Hay: Sebaceous Glands in the Mucous Membrane of the Mouth, Proc. of the Tenth Annual Session of the Assn. American Anatomists, 1897, p. 76.

3. Allen, C. W.: Case Demonstration, J. Cutan. Dis., 1897, p. 29.

the lower lip was involved. In two or three other cases the condition was associated with seborrheic eczema of the scalp.

Delbanco,[4] in 1898, presented a male syphilitic patient with oral Fordyce's disease. The microscopic examination revealed principally a simple hypertrophy of mucous glands. Several men discussed his presentation. Engelman suggested that the teeth played a part. Schmilinsky referred to a case in which the microscopic examination showed a hyperplasia of the mucous glands. Westberg explained the affection by mechanical irritation; he had observed an analogous condition on the penis. Frankel claimed that the process was inflammatory, but Delbanco said that a microscopic preparation did not confirm this belief. Unna alleged that a case of Baelz's disease of the mouth, which he had worked on, corresponded exactly to that presented by Delbanco.

In 1899, Delbanco [5] reported its occurrence in a second syphilitic, and said that it was to be expected in syphilitic patients. Frankel proposed to call the condition myxadenitis.

Audry,[6] in 1899, claimed that each nodule corresponded to a sebaceous gland or a sebaceous gland lobule. He found two types of sebaceous glands present: first, subepithelial sebaceous glands whose structure and relation presented nothing anomalous; second, intraepithelial sebaceous glands (Figs. 1, 2 and 3). All opened on the surface by an excretory duct. An important point was the lack of association of true hairs, although in some of the better developed subepithelial glands the duct became filled with sheaves of small yellow scales which would represent a rudiment of hairs. He claimed that these glands developed at puberty at the same time as the general hair system; that they were present in children and seldom seen in women. He concluded that the disease was due to embryonal rests.

Later in the same year, Delbanco [7] again reported the affection, this time in well subjects. He also presented a third case, again in a syphilitic, in whom he felt sure that the bodies became more strongly developed during specific treatment. This time the essential histology was that of sebaceous glands which lay, in agreement with Audry, either deeper in the corium or higher in the epiderm. The epiderm was normal and nothing indicative of hairs could be found. He came to the con-

4. Delbanco, E.: Ueber die Entwickelung von Talgdrusen an der Schleimhaut des Mundes, München. med. Wchnschr., 1898, p. 1510.

5. Delbanco, E.: München. med. Wchnschr., 1899, p. 459.

6. Audry, C.: Ueber eine Veränderung der Lippen und Mundschleimhaut, bestehend in der Entwickelung atrophischer Talgdrusen, Monatschr. f. prakt. Dermat. **29**:101, 1899.

7. Delbanco, E.: Ueber die Entwickelung von Talgdrusen in der Schleimhaut des Mundes, Monatschr. f. prakt. Dermat. **29**:353, 1899.

clusion that the affection depended on an abnormal congenital germinal anlage, which ordinarily became visible at a definite period of life, and which through different influences could attain an excessive development. Thus, in the syphilitic he presented he explained the overgrowth of sebaceous glands during specific treatment on the basis that the mucosa, when salivated, is more exposed to traumatic irritation, such as from decayed teeth.

In 1900, Suchannek [8] reported an oral case. The microscopic examination revealed typical sebaceous glands. He was the first to emphasize a predilection on the part of the disease for the interdental part of the oral mucous membrane.

In 1900, Heuss [9] reported his case. He thought the histologic sections resembled rhinophyma, but that they differed from it in the absence of plasma cells. The ducts of the sebaceous glands contained masses of fat and also horny cells, often spirally rolled, which resembled rudimentary hairs. The epiderm in places showed hydropic degeneration. He decided to call the disease acne rosacea of the mouth. He concluded that the new growth of sebaceous glands came exclusively from the rete of the mucosa, and did not arise from the previously formed snared off buds in the mucous membrane or from invaginated aberrant buds dating from fetal times.

Radcliffe Crocker,[10] in 1903, provisionally suggested the name of "pseudocolloid of the lips" from the clinical aspect.

In 1904, MacLeod [11] reported a well-marked labial case, and in the same year Hutchinson,[12] quite unaware of any prior reports on the subject, reported "milium of the prolabium," and compared them to the milium of the lower eyelid.

In 1905, White [13] examined 540 persons and of this number fifty, or approximately 10 per cent., were positives for the disease. Nearly all lesions were on the upper lip, but some were on the lower and in the mouth. The ratio of males and females affected was 2:3. The youngest patient observed was 12 years old, the oldest 71. The condi-

8. Suchannek, H.: Ueber gehauftes Vorkommen von Talgdrusen in der Menschlichen Mundesschleimhaut, München. med. Wchnschr. **1**:575, 1900.

9. Heuss, E.: Ueber postembryonale Entwickelung von Talgdrusen in der Schleimhaut der Menschlichen Mundhöhle, Monatschr. f. prakt. Dermat. **31**: 501, 1900.

10. Radcliffe-Crocker, H.: Diseases of the Skin, Philadelphia, P. Blakiston's Son & Co., 1908, p. 758.

11. MacLeod, J. M. H.: A Case of a Peculiar Affection of the Mucous Membrane of the Lips, Brit. J. Dermat. **16**:145, 1904.

12. Hutchinson, J.: Fordyce's Malady (Milium of the Prolabium), The Polyclinic, Lond. **8**:6, 1904.

13. White, C. J.: Fordyce's Disease, J. Cutan. Dis. **23**:97 (March) 1905.

tion was most frequently encountered in people between the ages of 20 and 40. Seventy per cent. of the patients suffered from diseases which were intimately associated with disorders of the sebaceous glands; 77 per cent. were dyspeptic. Microscopic examination of one patient disclosed a rhinophymatous condition which was in reality outside the lesion proper—in other words, the disease itself was beyond the domain of the glands. White concluded that the essential change lay in the epidermis and consisted of acanthosis, edema and parakeratosis, thus agreeing with Fordyce, the original investigator of the disease.

In 1909, Fordyce,[14] in commenting for a third time on the disease, said it is still a disputed question as to how these bodies originate and whether they are dependent on the presence of sebaceous glands on the mucous surfaces.

In 1913, Pringle [15] reported an extensive case.

Sutton,[16] in 1914, in a histologic examination of three cases, found well developed sebaceous glands. In places they were confined to the subpapillary regions, but in other specimens well defined groups of cells possessing the characteristics of sebaceous glandular substance were found scattered through the rete. In some of the specimens structures somewhat resembling rudimentary hairs were found. Sutton concluded that Fordyce's disease was due to the abnormal presence of sebaceous glandular elements in the epidermis and corium of the mucous membrane lining the mouth and that the yellow coloration of the lesion was due to the collection of fatty matter in the rete. The sebaceous glands probably sprang from invaginated aberrant buds dating back to fetal times.

In 1919, Little [17] believed he had seen instances of Fordyce's disease with quite unusual frequency in lichen planus.

STATISTICAL STUDY

This was based on the examination of 248 persons—127 males and 121 females of all ages. It was conducted by examining groups of persons of about the same age, such as high school and college students, patients in children's hospitals, older ones in the city hospital wards,

14. Fordyce, J. A.: Some Affections of the Oral and Nasal Cavities which Are Related to Skin Diseases, New York M. J., 1909, p. 467.

15. Pringle, J. J.: Fordyce's Disease, Proc. Roy. Soc. Med. London, Dermat. Section **7**:48, 1913-1914.

16. Sutton, R. L.: The Histopathology of Fordyce's Disease, J. M. Res. **29**:489, 1914.

17. Little, E. G.: Lichen Planus, J. Cutan. Dis. **37**:649, 1919.

and others. The results are therefore representative of all classes of society. The findings have been distributed under different headings, and a compilation of them gives the following data:

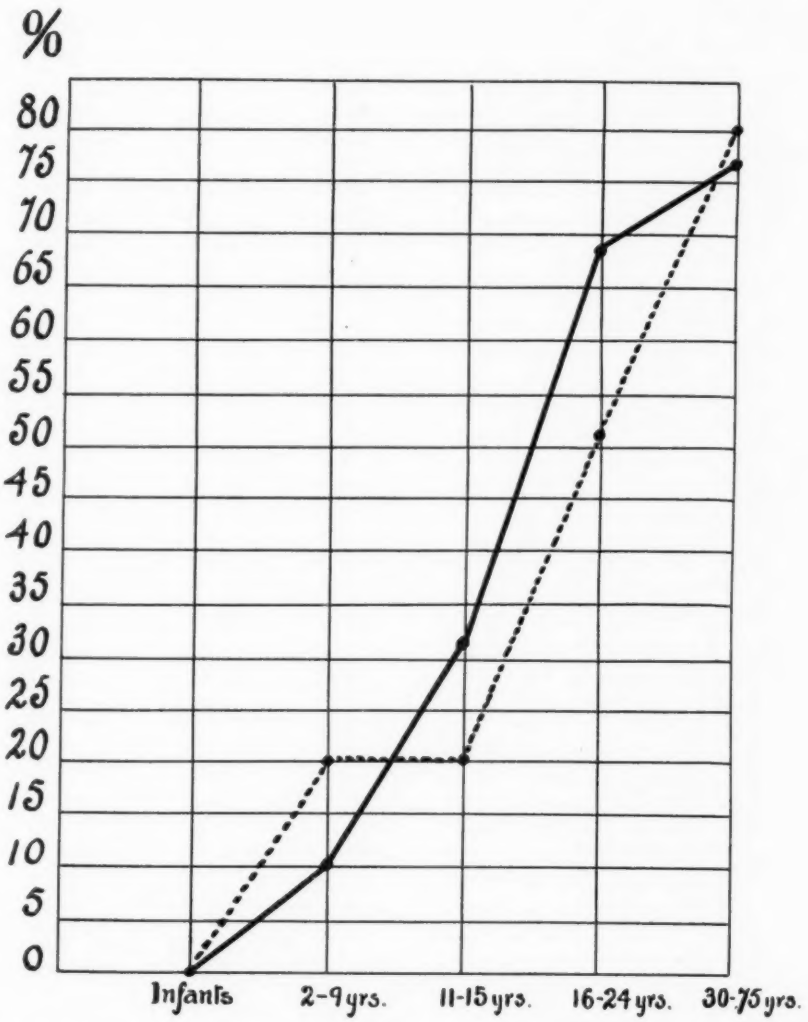

Fig. 1.—Incidence of Fordyce's disease according to age and sex, 248 cases (arranged from Table 2); solid line, males; broken line, females.

The following points stand out in the several tables:

Table 1: Considering the disease regardless of the age of the patient, males and females are about equally affected.

Table 2: The spots were not observed once in infants (below 4 weeks of age in our series). Their incidence increases with age in both

males and females (see chart). They occur earlier in males than in females. After the age of 30 their incidence in males and females is the same. Seventy per cent. of all persons above the age of puberty exhibit these spots.

Table 3: As to well-marked cases (referring to the total number of spots and irrespective of location), these occur earlier and are more frequently found in males.

Table 4: In regard to focal distribution (upper lip, lower lip, mouth), sex and age have a part as follows:

(*a*) In the earlier age group (16 to 24 years) the spots in females have a severer local restriction than in males, that is, they are restricted to the upper lip. If mouth lesions appear, they will be seen more frequently with advancing years. This applies to both males and females, but especially to females. In the latter mouth spots appear three times more frequently in later periods than in earlier.

(*b*) Lip and mouth together are affected at all ages more commonly in males than in females.

Isolated clinical data which the tables do not bring out are:

The youngest age at which they were observed was 3 years, the oldest 85 years.

The range in number of spots extended from five to ten up to hundreds.

The lower lip was never the only part involved. If affected at all, it was as part of an extensive case.

We agree with Suchannek that oral spots tend to be limited to the interdental region.

In two cases one or two yellowish, shot-sized tumors were present in the center of a cluster of Fordyce spots in the mouth. These were doubtless small sebaceous cysts. In only three persons was any other pathologic alteration noted, and this was limited to a moderate hyperemia around and between the spots.

HISTOLOGIC STUDIES

These have to do with the basic nature of Fordyce's disease.

Our histologic material consisted of forty-three blocks of tissue excised at necropsy from fourteen human subjects and three monkeys. In all but one or two of these, owing to their being "unclaimed" bodies, we were able to remove both lips in their entirety and all of the buccal mucosa. The incisions included one centimeter or more of skin externally, pierced the whole cheek and passed fully to the gingival margins and behind the last molars within the mouth. This mass was then removed to the laboratory and studied at more leisure (Fig. 2*A*).

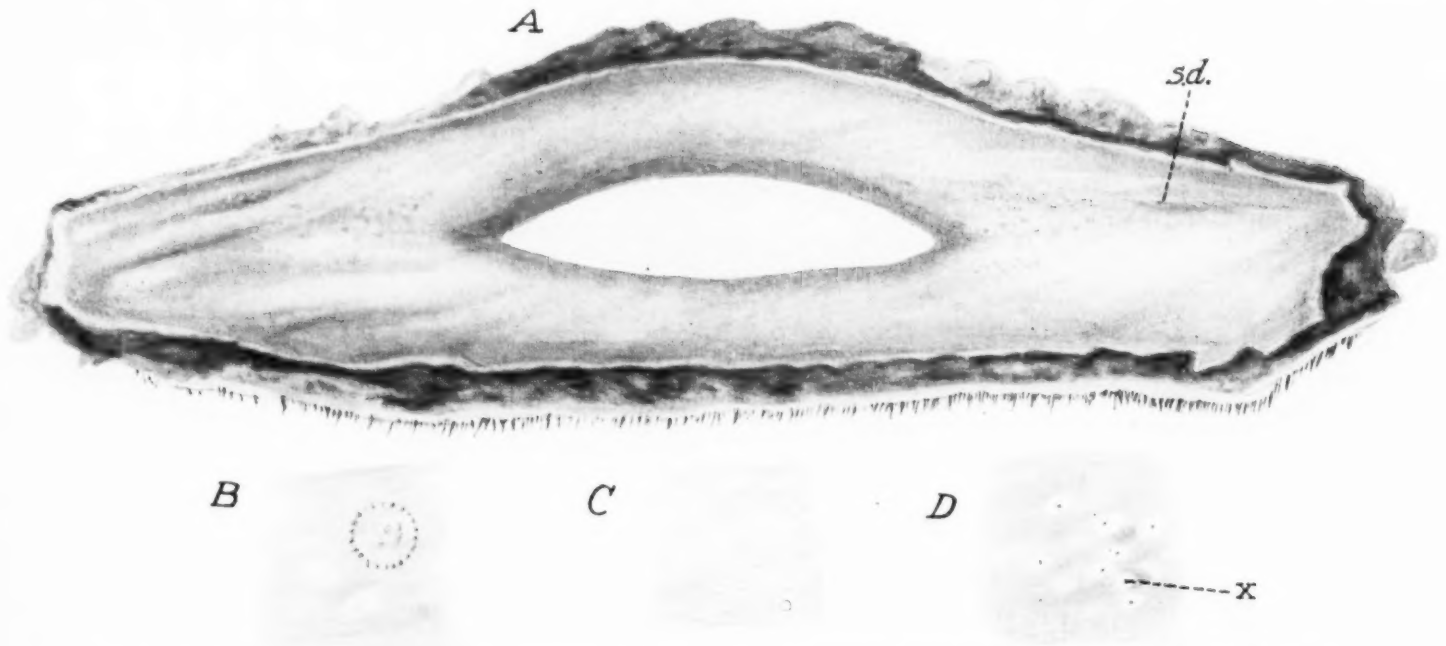

Fig. 2.—A, fresh, untreated postmortem specimen showing scope of material examined; natural size; *s d* is the orifice of Steno's duct. B, selected portion of A after fixation in formaldehyd, and showing experimental tattooing; magnified about ten times. Only the beads of secretion are visible on the surface—not the whole spot as in *a*. C, "map" of position of clinical Fordyce spots as they appeared enlarged about three times under a reading glass, and made before starting laboratory treatment. This is only one of many such "maps." D, same spots as in *c*, and similarly enlarged about three times, after staining with sudan III. Only one, *x*, exhibits traces of the underlying gland in the form of an incomplete pink halo. The others show only the duct orifices and are small, probably unilobular glands.

TABLE 1.—Incidence (248 Cases)

	Patients Examined Total Number of	Positive	Negative	Positive Percentage
Males (all ages)	127	44	83	35
Females (all ages)	121	38	82	31

TABLE 2.—Incidence According to Age and Sex (248 Cases)

	Infants			2-9 Years			11-14 Years			16-24 Years			30-75 Years		
	No. Positive	No. Negative	Percentage	No. Positive	No. Negative	Percentage	No. Positive	No. Negative	Percentage	No. Positive	No. Negative	Percent. age	No. Positive	No. Negative	Percentage
Males	0	45	0	1	9	10	7	15	32	17	8	68	19	6	76
Females	0	45	0	2	8	20	3	13	20	13	12	48	20	5	80

TABLE 3.—Distribution of Well-Marked Positive Cases
(Basis of Sixty-Nine Positive Cases)

	16-24 Years			30-75 Years (50 Cases)			Summary—All Ages (16-75)		
	Positive	Marked	Percentage Marked	Positive	Marked	Percentage Marked	Positive	Marked	Percentage Marked
Males	17	8	47	19	6	32	36	14	39
Females	13	1	8	20	4	20	33	5	15
							69	19	28

TABLE 4.—Distribution According to Location

	16-24 Years					
	Male		Female		Totals	
	No. of Cases	Percentage	No. of Cases	Percentage	No. of Cases	Percentage
1. Upper lip alone	6	35	9	69	15	50
2. Upper lip and mouth	8	47	2	15.5	10	33
3. Upper lip, lower lip, mouth	1	6	0	0	1	3
4. Mouth alone	2	12	2	15.5	4	13
Upper lip (1, 2 and 3 above)	15	88	11	85	26	86
Mouth (2, 3 and 4 above)	11	65	4	31	15	49

	30-75 Years					
	Male		Female		Totals	
	No. of Cases	Percentage	No. of Cases	Percentage	No. of Cases	Percentage
1. Upper lip alone	2	11	2	10	4	10.5
2. Upper lip and mouth	12	63	8	40	20	51
3. Upper lip, lower lip, mouth	1	5	3	15	4	10.5
4. Mouth alone	4	21	7	35	11	28
Upper lip (1, 2 and 3 above)	15	79	13	65	28	72
Mouth (2, 3 and 4 above)	17	89	18	90	35	90

	Summary—All Ages (16-75 Years)			
	Male	Female	Totals	
	No. of Cases	No. of Cases	No. of Cases	Percentage
1. Upper lip alone	8	11	19	28
2. Upper lip and mouth	20	10	30	43
3. Upper lip, lower lip, mouth	2	3	5	7
4. Mouth alone	6	9	15	22
Upper lip (1, 2 and 3 above)	30	24	54	78
Mouth (2, 3 and 4 above)	28	22	50	72

Of these fourteen subjects, the spots were visible grossly in nine human patients and in none of the monkeys. The material from the remaniing five human patients was used for normal controls. All material was fixed in 4 per cent. formaldehyd.

We used both the frozen and paraffin methods. Ten spots from four different necropsy examinations were immersed in a saturated solution of sudan III for twenty-four hours, differentiated in 50 per cent. alcohol and then the frozen sections were cut. The remaining thirty-three specimens were embedded in paraffin, cut and stained in the routine manner by hematoxylin and eosin. Of the latter specimens, thirteen contained Fordyce spots, making a total of twenty-three spot-containing blocks of tissue sectioned either by the frozen or paraffin technic. Thirteen human and seven monkey blocks were cut as normal controls.

The propositions of the histologic studies were three: (1) to determine whether sebaceous glands are or are not present in relation to the

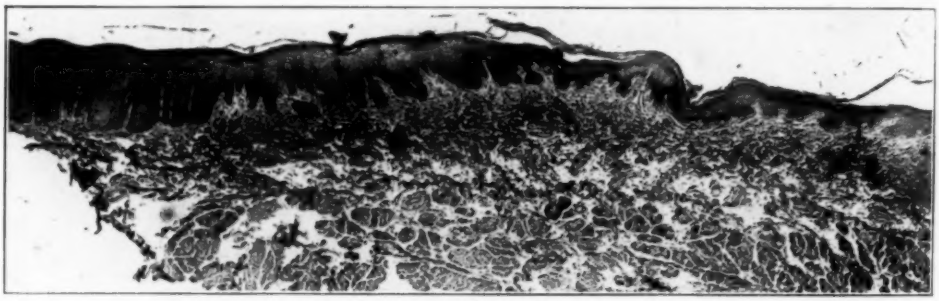

Fig. 3.—Hyperkeratosis and acanthosis adjacent to a Fordyce's spot. Grossly this resembled leukoplakia.

spots; (2) to determine whether the spots seen clinically might be at least referable to such sebaceous glands, and (3) to ascertain whether what we observe clinically as a spot is the gland itself.

Proposition 1.—To Determine the Presence or Absence of Sebaceous Glands.—This was a simple matter, and we promptly found sebaceous glands in sections, as might have been expected when so many workers on the subject had already done so; but our examinations were rewarded by certain additional findings.

We found that after fixation in formaldehyd for twenty-four hours the clinical Fordyce spots in all the tissue blocks became fainter, due both to the fading out of the contrasting pink of the living mucous membrane and to the opacity which coincidentally develops in it. In most of the spots the approximate center was now occupied by a minute gray-white bead (Fig. 2*B*), and in blocks which were subsequently

immersed in sudan III solution this bead took on an intense red color–the spot as a whole forming a deep pink halo about it (Fig. 2 *D*). Its invariable presence within the halo or Fordyce spot is important in relation to, and disagrees with, White's observation that his epidermal degeneration occurred lateral to, or at least outside of, the sebaceous gland. He says "the sebaceous element though abundantly present, lies beyond the diseased tissue proper," and "as the photographs show, the sebaceous glands present lie beyond the boundaries of the lesion proper." The bead is doubtless due to expression of fat from the gland as the tissue has shrunk under the influence of the fixative. Frozen sections from ten of the spots in every case confirmed the presence of sebaceous glands, as have also all the paraffin sections (from thirteen spots), making twenty-three in all, which seems a sufficient number from which to draw positive conclusions.

These findings mean that in every case sebaceous glands occurred in relation to the clinical spots. They also establish the fact that Fordyce spots are fatty, but have not necessarily proved that the clinical appearance is due to the sebaceous glands themselves deeper down. There is still epiderm above and collagen around the glands to dispose of, which theoretically might have become fatty secondarily. It is this which has led to the additional procedures indicated under proposition 2 which are to follow. The foregoing observations, however, show beyond a doubt that the condition is at least *referable to* the underlying sebaceous gland. If it were not so, some of the clinical spots ought to appear apart from the red fatty beads and the pink halo, which they never did.

GENERAL HISTOLOGIC FINDINGS

Before proceeding to the second proposition it will be necessary to state in more detail the histologic findings both in respect to the established observations of other workers and to special ones we have brought out. It is surprising how good the histologic detail was in this soft mucous membrane which was taken from subjects dead as long as three days.

The surface epithelium in our positive cases varied within wide limits, as might be expected of subjects dead for different time periods and from different diseases. In one series of sections the epiderm was markedly thinned out over the sebaceous glands, but in most cases it was practically normal in thickness. In others there was a moderate amount of acanthosis and hyperkeratosis (Fig. 3). In several of the cases, both positive and negative (that is, with reference to the sebaceous glands) there was considerable hydropic degeneration in the middle layers of the epithelium. This was probably due to postmortem autolysis. In one of the control cases parakeratosis, acanthosis and

edema of the epithelium were found histologically, which corresponds to White's view of the essential histopathology of Fordyce's disease. It is possible that White's conclusions were the result of one of these coincident and irrelevant epidermal changes, and that he would have modified them on study of more than one block of tissue.

Fig. 4.—Case of Fordyce's disease; sebaceous cells near orifice of sebaceous gland, apparently in rete; *o*, oblique section of duct of the gland.

In regard to the sebaceous glands, as stated before, in every one of the nine necropsy examinations in which the yellowish bodies were seen clinically sebaceous glands were found on histologic examination, and in every position we examined (twenty) in which the yellowish bodies could not be seen grossly, sebaceous glands were not discoverable microscopically. We found various complexities of lobulation in them.

Some were of the form described as "simple vestige" by Sappey,[18] that is, they consisted of a single small pouch. Most of them, however, were typical, fully developed, racemose glands consisting of two or four lobules. They were unconnected with hairs, opening directly on the free surface. We were unable, with Delbanco, to confirm the finding by Audry, Heuss and Sutton of structures that were suggestive of rudimentary hairs.

Fig. 5.—Sebaceous cells in continuity with those of hair-shaft, and apparently in a position corresponding to the rete; a condition of the same order but deeper down than that illustrated in Figure 4.

In one of the sections a group of sebaceous gland cells was found apparently within the epithelium at the bottom of one of the interpapillary pegs which penetrated rather more deeply into the corium than

18. Duhring, L. A.: Cutaneous Medicine, 1895, Pt. 1, p. 34.

the adjacent ones. However, the spiral arrangement of the more superficial epithelial cells above them (the sebaceous cells) suggested the presence of a duct of a sebaceous gland about which these cells were disposed, and which had evidently been cut tangentially (Figs. 4, 5 and 6). We note this apparently unimportant feature because it may possibly explain the intra-epithelial sebaceous glands seen by Audry, Heuss and Delbanco.

Fig. 6.—Same section as that shown in Figure 5 to show deep position and therefore undoubted sebaceous glandular nature of the elements of Figure 5. The rectangle indicates the part enlarged in Figure 5.

In half of the cases the sebaceous glands were surrounded by a moderate to a marked cellular infiltrate consisting chiefly of small lymphocytes, an occasional plasma cell and mast cells. In a few cases there was a slight diffuse round cell infiltrate within the papillary layer of the corium. Other details of the corium were inconstant, some of the sections showing distention of the capillaries and lymphatic spaces, while in others there was none. One section showed formation of dense hyaloid collagenous bundles suggesting an old scar; all others

had a normal, loosely reticulated corium. The amount of elastica varied considerably in the sections. Sweat glands or hairs were not found in any of the sections.

Proposition 2.—To Identify the Spots Seen Clinically as Referable to the Sebaceous Glands.—This question was treated thus:

A. Mapping Out: The positions of the clinical spots on several of the freshly excised mucosae were precisely plotted on paper with the aid of compasses (Fig. 2*C*). Both labial and oral specimens were used, involving several square inches of surface in each specimen and including a dozen or more spots. After mapping, the specimens were fixed, washed and immersed in sudan III. The positions of the red (fatty) beads, which indicated orifices of sebaceous glands, and the halos which have already been described were compared with the "map"

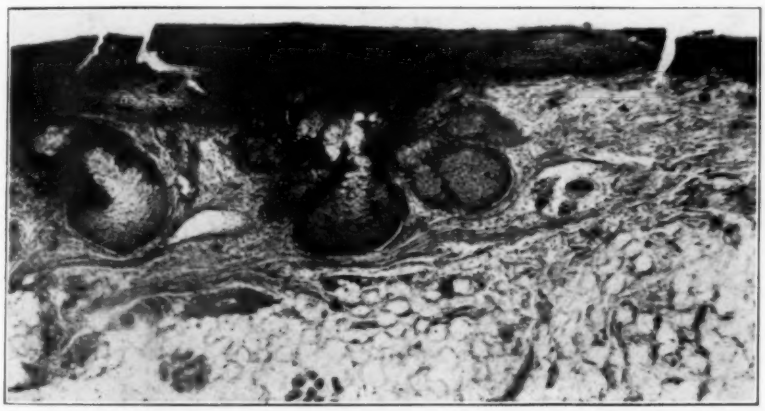

Fig. 7.—Experimental incisions marking gross, naked-eye boundaries of a Fordyce spot.

and found to coincide. Expressed mathematically, the clinical spots were found to be equivalent to the red beads and pink halos. The latter were later found histologically to be in relation to sebaceous glands or to be actual parts (ducts) of sebaceous glands. Therefore this procedure of simple gross staining has shown us that the clinical spots are, at least in part, portions of actual sebaceous gland structure (duct orifices) and are always in relation to sebaceous glands.

B. Scarification: A spot was closely surrounded by superficial incisions of the mucous membrane made with a fine scalpel. Histologic examination of the tissue block from the spot showed that sebaceous glands lay between and below the incisions (Fig. 7).

C. Tattooing: A shallow stockade was made around some of the clinical spots with India ink and a fine needle (Fig. 2*B*). In other

cases the ink was pricked directly into the center of the spot. In every case the black carbon particles were to be found histologically either only around (Fig. 8) or in the center (Fig. 9) of a sebaceous gland. The last two means, scarification and tattooing, have served as tags applied grossly to the clinical spots which have betrayed them microscopically as related to (if, indeed, not) sebaceous glands.

D. Deduction: This point has been considered before. In twenty-three blocks of tissue containing Fordyce's spots clinically a sebaceous

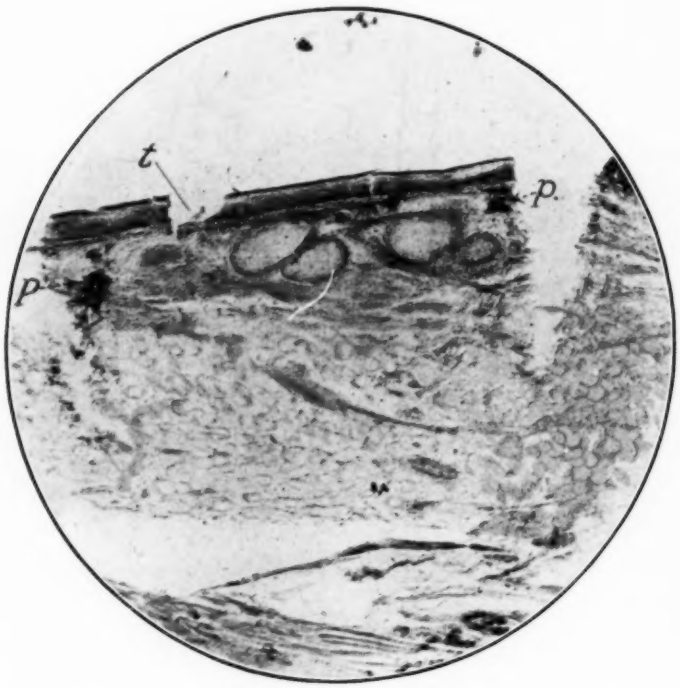

Fig. 8.—Experimental postmortem tattoo marks around a Fordyce spot. Clumps of pigment (India ink) at *p*—more or less in the needle track; *t* is a technical tear.

gland was found every time. In twenty blocks containing no spots, no sebaceous glands were found.

Proposition 3.—To Show That What We Observe Clinically as Spot Is the Gland Itself.—The foregoing results prove that the sebaceous glands are responsible for the clinical spots, and that the spots lie in the same perpendicular trajectory as the gland; that is, we can absolutely eliminate the idea that the sebaceous glands are accidental associates of the clinical spots. The remaining question is, Are they directly responsible, that is, do we see the glands themselves, or is

there some yellow change in overlying tissue which is dependent on the presence of the gland? We have met this proposition by listing the possibilities and eliminating them and by certain direct tests.

Taking up the possibilities first, we feel limited to two "yellowing" processes—fatty and collodial—and to only two structures in which they could occur, namely, the epithelium of the mucosal surface and the collagen of the submucosa. We can eliminate collagen because only once were collagen bundles found that had a broad hyaloid quality. Furthermore, no other observers have even hinted at such a degeneration. With this one exception all the collagen was rather delicately

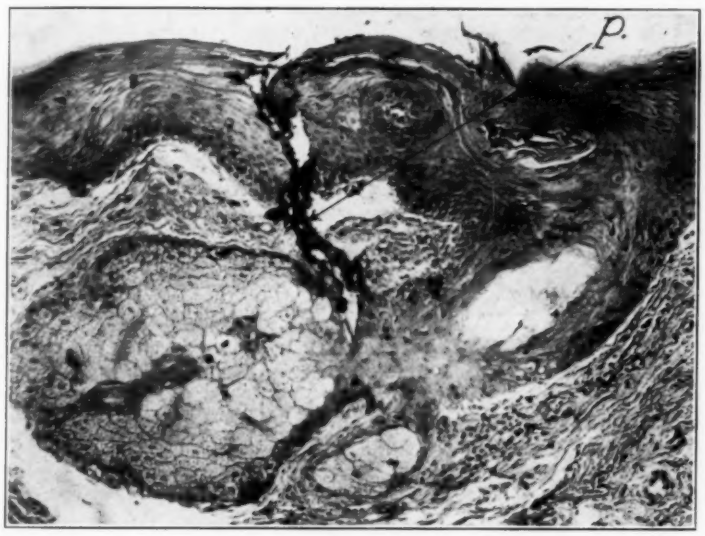

Fig. 9.—Experimental tattoo mark into center of Fordyce spot. Pigment along needle track at *p*.

fibrillar. Fatty changes are more likely than colloid in view of the nearby sebaceous glands. In the first place, they are possible as a fatty metamorphosis of collagen bundles. This we have seen and are familiar with in cases of xanthoma tuberosum and in the tarsal plate of the eyelid around the meibomian glands, but fatty appearances in sudan III properties are so clear cut as not to be easily overlooked, and are lacking in all of our material. Secondly, we have observed areas of normal fat in normal skins (histologically) which have lain unusually high up. We refer to the fatty interstices of the retinaculum cutis, and have considered the possibility that these ectopic sebaceous glands might have determined, or at least been associated with, an unduly high ectopia of such fatty areas also, but actual study shows that they rarely occurred

in our sections and could be dismissed. In the third place, we have carefully studied the surface epithelium for degenerations, because we have disagreed with so high an authority as White.

We report that vacuolization, such as White describes, occurs frequently in our sections, but not as invariably nor as massively as conditions would require. Most important, we have never seen any fat globules anywhere in the epiderm in our sudan III sections—not even in the rete cells directly over these sebaceous glands. We say "even" because rete cells are able to show them. They have been observed by both Pollitzer and ourselves in cases of xanthoma tuberosum and had clearly phagocytosed fatty material from the underlying parts. We agree with White that the degeneration is hydropic, but submit that it did not occur constantly enough in our material to explain the spots, and that the color change to be expected would be

Fig. 10.—Experimentally abraded epiderm over Fordyce spot, showing completeness of removal. The only fragments remaining are shown at *e*, and are insufficient to have been capable of being responsible for the naked-eye yellowing of the Fordyce spot.

a watery or at most a gray one rather than yellow. We have not followed serial sections through every spot in a search for the hydropic degeneration because findings we will consider next make them unnecessary.

These direct tests were made:

A piece of mucous membrane containing the yellow spots was fixed in formaldehyd. The surface was scraped with a sharp blade until we judged that the epithelium was removed. The yellowish spots did not disappear, but undoubtedly became more apparent. On immersion in sudan III the spots stained rapidly. These phenomena are to be explained only on the basis of subepithelial structures.

A strip of fresh mucous membrane containing the spots was treated similarly.

During removal of the surface epithelium the spot continuously slipped out under the knife-blade in a direction opposite to that of the moving blade and in a direction also opposite to that of the surface epithelium. No doubt we were witnessing a movement of an underlying sebaceous gland, which for a time moved away from the point of pressure, but was held to the epithelium after a short excursion by its ductile attachment. After considerable abrasion the spot still remained and on examination with a hand lens exhibited a small perforation in its center from which a small drop of oily material projected. This was evidently the duct orifice and its contained sebum. Histologic examination of this tissue confirmed the absence of the surface epithelium and the presence of sebaceous glands (Fig. 10).

The latter trials appear to us to be in the nature of a finality as demonstrating that a submucous factor is responsible for Fordyce's spots, for we have in both trials witnessed phenomena which were occurring apart from the surface epithelium. In one case the surface was nonexistent, and in the other it was moving contrary to the spot.

PATHOGENESIS

The presence of the glands may best be explained on embryologic grounds. The mouth cavity develops from the stomodeum which forms as an invagination of the ectoblast on the ventral surface of the cephalic end of the embryo.[19] During this process the germinal anlagen for sebaceous glands are carried into the mouth and further develop, about the age of puberty, with the general hair and sebaceous gland system. The common occurrence of the glands in the upper lip and their infrequent appearance in the lower lip is best explained by the natural habit for hair and sebaceous glands to be more numerous on the upper lip, and any dislocation into the position of Fordyce's spots could not be expected to change this numerical habit.

As to the oral cases, the preference of the glands for the region of the interdental line could be explained on the same embryologic basis as facial dermoids occurring in the cheeks.[20] The mandibular fissure between the maxillary and mandibular processes unites from behind forward, their incomplete union being represented by the mouth opening (Fig. 11). The line of union from the angle of the mouth backward corresponds roughly to that region of the cheek externally which is opposite the interdental line (Fig. 12). By irregular approximation along this line, portions of the external surface epithelium may be sequestrated on the mucosal side and give rise to oral sebaceous glands.

This theory is open to the objection that it does not explain why hair and sweat glands do not also develop in the mouth in Fordyce's disease. This we cannot explain, but that such structures can occur in the mouth is well known, and not alone in the mouth but at other

19. Piersol, G. A.: Human Anatomy **1**:60, 1916.

20. Bland-Sutton, J.: Tumors, Innocent and Malignant, New York, 1911, p. 448.

mucocutaneous regions. Thus, we have studied the lining of a submucous oral cyst referred to us by Dr. T. T. Thomas, in which the sebaceous glands were associated with hairs (but not, so far as we could find, with sweat glands) (Fig. 13) and a hair follicle on the glans penis has actually been commented on and figured as the habitat of the favus fungus.[21] We wish to note in passing that on examination of fifteen vulvas for Fordyce's spots we found one case of hypertrophied labia minora with upward of thirty yellow spots on either inner side, and

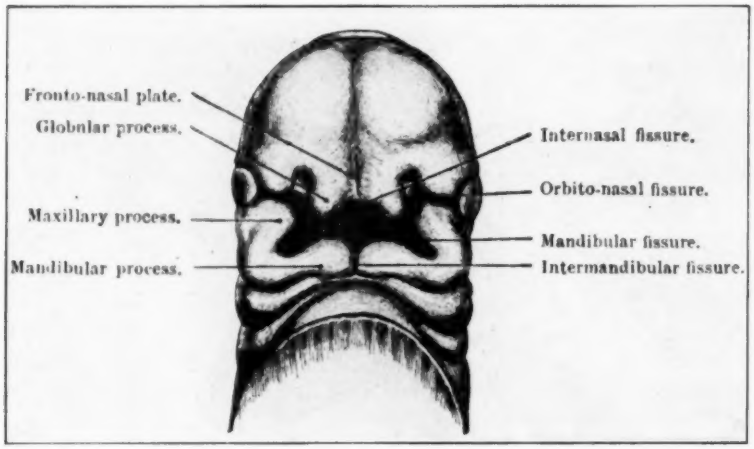

Fig. 11.—Reproduction from Bland-Sutton; head of early embryo. The oral Fordyce's spots are concerned with the mandibular fissure.

Fig. 12.—Reproduction from Bland-Sutton; the black lines indicate the situation of the embryonic fissures.

that Westberg, in discussing Delbanco's paper, mentioned a condition analogous to Fordyce's disease as occurring on the penis.

CONCLUSIONS

Statistical conclusions are given in brief form in the tables.

From the etiologic standpoint, there has long been a disagreement whether Fordyce's disease is due to degeneration of the surface epithelium (a valid disease) or to the presence of ectopic sebaceous glands,

21. Hardy: Traité pratique et descriptif des Maladies de la peau, 1886.

that is, a simple displacement and therefore not necessarily a disease. We feel that the experiments herewith reported have definitely eliminated an epidermal factor for what is seen clinically and on the contrary established the glands as the etiologic basis for the phenomenon.

As to the pathogenesis, the spots are probably due, as Audry and Sutton state, to the snaring off and invagination of germinal anlagen. They increase in size at about the age of puberty pari passu with the general hair and sebaceous gland systems.

Fig. 13.—Portion of wall of submucous cyst in floor of mouth with numerous sebaceous glands and hair follicles (Dr. T. T. Thomas' case). Shows possibility of even greater cutaneous inclusions than individual sebaceous glands like Fordyce's spots. Follicle and contained hairs at *h*.

As the condition is present in 70 per cent. of adults, causes no detrimental symptoms and is not a genuine lesion, we agree with Hartzell [22]

22. Hartzell, M. B.: Diseases of the Skin, Philadelphia, J. B. Lippincott Co., 1919.

that there is doubt as to the propriety of calling the condition a disease; that is, the spots have no pathologic significance beyond that of sebaceous glands elsewhere on the body. But we hasten to add that in spite of the fact that Wertheimer [23] (and probably Kolliker [23] even earlier) observed sebaceous glands in the lip histologically thirteen years before Fordyce's publication, the real credit must still accrue to Fordyce for having brought to clinical light a buried and forgotten scientific observation.

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23. Wertheimer, E.: De la structure du bord libre de la levre au divers ages, Arch. gén. de méd. Par. **1**:399, 1883.

BLASTOMYCETOID BODIES IN A SARCOMA-LIKE TUMOR OF THE LEG*

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This communication is offered for two reasons: In the first place, it is desired to place on record certain blastomycetoid bodies in order both to obtain information concerning possibly previous reported cases and to supplement cases which may be reported in the future. In the second place, attention is called to the phagocytosis of both normally and abnormally staining elastic fibers both in this case and in proved cases of blastomycosis. For the further study of the latter feature the writer would be grateful for blastomycetic material either in the paraffin block or in the wet.

REPORT OF A CASE

History.—A white woman, aged 23 years, developed a "mole" on the upper portion of the calf four years ago. Stationary for six months, it grew rapidly for the next nine months, attaining the size of a small lemon, when it was removed under local anesthesia. It was not painful, never discharged pus, never ulcerated, was smooth-surfaced, bluish-red and well circumscribed. The patient also had a lump in her right breast the size of a cocoanut, which began several years before the lesion on the leg and exhibited discharging sinuses long before the appearance of the "mole" and was still doing so when it appeared. The enlarged breast antedated her pregnancy.

The operative scar on the leg has healed perfectly, and the breast shows no sinuses. It feels uniformly lobulated, like a hypertrophied mammary gland, with none of the coarse, irregular nodularity to suggest a granulomatous condition. The overlying skin shows a few old small scars.

Laboratory Examination.—The Wassermann reaction was negative. A roentgenogram of the chest was negative for tuberculosis.

HISTOLOGIC EXAMINATION

Material.—This consisted of a spheroidal tumor about 4 cm. in diameter surrounded by a narrow rim of skin. The tumor projected above the surface, and as fixed in formaldehyd was brown and covered with a thin, yellow, loosely attached false membrane. It was not ulcerated. The section surface showed a smooth lined cyst, 2 cm. in diameter, on one side, and on the other a semisolid dirty chocolate-brown material. The latter suggested a sarcoma or extremely bloody granuloma which in large part had undergone liquefaction necrosis to the

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production of a hemorrhagic cyst. As all the material had been fixed in formaldehyd, cultural studies were impossible.

Methods of Examination.—Sections were cut by both the frozen and paraffin technic. In all, several hundred sections have been examined. In part serial, they have been stained by hematoxylin and eosin, thionin, Gram's, Van Gieson's, Mallory's anilin blue for connective tissue, Kossa's silver method and Perl's method for iron. Much of the frozen section work had in view the possibility of dissecting out of bodies from the wet frozen section in case they should have appeared, but this failed in practice because the bodies were so few.

Some of the material has also been digested with antiformin, again having in mind the isolation of the blastomycetoid bodies or mycelia. The latter work has also been impractical because there has been too much detritus (cotton fibers, incompletely dissolved collagen, etc.) to

Fig. 1.—Gross appearance of lesion.

permit a profitable search. Only a few psammoma forms were found. These will be described later.

Results of Histologic Studies.—Nothing abnormal appears in the epiderm except an acanthosis similar to that seen in numerous other dermatoses (Fig. 2). In general it may be said that there were three important features, all limited to the tumor in the corium:

First, a more or less hemorrhagic and disintegrated granulation tissue of extremely vascular character composed most of this tumor. The degeneration and hemorrhage were much more marked toward the center, while in the periphery organization was beyond reproach. The bulk of this tissue was composed of broad capillaries with very distinct and plump endothelial lining cells, and between them there was only a scanty amount of fibrous tissue (Fig. 4). While peripherally it did not widely infiltrate the normal tissue, it was rather definitely limited from it, but without such an individual structure as a capsule. Polymor-

phonuclears were scarce and never concentrated into miliary abscesses as in typical blastomycosis.

The second feature consisted in granulomas which were identical with those of tuberculosis. They were not numerous, and were always placed in the extreme periphery of the tumor. They consisted for the most part of endothelioid cells, showing at most but a few lymphocytes peripherally, and while their centers were sometimes

Fig. 2.—General relationships: *g. t.*, granulation tissue moiety of the lesion; *f. b. g.*, foreign body granuloma at periphery of lesion.

necrotic, they were never markedly so. Occasionally a few polymorphonuclears appeared here just as they may in the earliest stages of tubercle formation. Acid-fast organisms have never been demonstrated in them in appropriately stained sections. Small giant cells occasionally appear in the periphery of these granulomas.

The third feature consisted in foreign body granulomas with their giant cells and associated structures.

Giant Cells and Associated Structures.—By the latter we refer to a blastomycetoid body and certain filaments which have turned out to be elastic fibers. The giant cells when fully developed were as large as any seen in tuberculosis, and of typical Langhans type. When seen, they too were practically always in the extreme periphery of the tumor, but never in uniform relation to the tubercles. At times several were

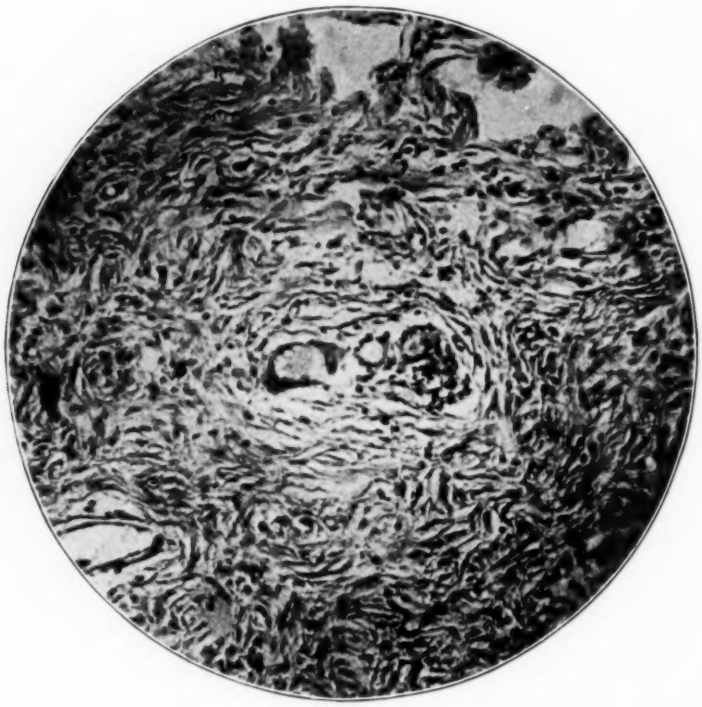

Fig. 3.—Same foreign body granuloma as in Figure 2, more highly magnified; surrounded by vascular granulation tissue.

grouped together and associated with a few lymphocytes to constitute a foreign body type of granuloma. In no case have acid-fast organisms been found. Most often no inclusions were visible. In perhaps only 2 or 3 per cent. of them are the "associated structures" encountered.

The Filamentous Structures.—When these were first noted they were suspected of being mycelial filaments. But in no case were segments discovered; there were no branchings, nor association with

special fruit bodies. Most of the structures stained blue, which was at first regarded as evidence of calcification, but which turned out to be an indication of elacinous degeneration.

The final proof of their elastic nature came in two ways. First, a filament was caught in just the right histologic plane to demonstrate it continuously both in its course within the giant cell, where it was bluish, and outside of it, where it was pink. In the second place, a similar phagocytosis was discovered in hematoxylin and eosin sections of blastomycosis and in those which were especially stained for elastic tissue. The effect of this finding (tempered of course by the lack of large numbers of cases which we like to study before dogmatizing) is to make us suspect that this phagocytosis may be a family trait for

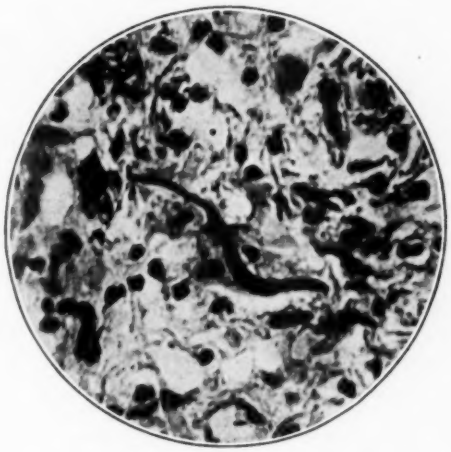

Fig. 4.—Elastic fiber (takes basic dye and is therefore in state of elacinous degeneration) becoming surrounded by giant cell.

blastomycosis; and that, if so, the discovery of such phagocytosis might prove of diagnostic value in obscure cases of blastomycosis. We wish to note in passing that the large numbers of giant cells which are seen in blastomycosis should not be considered as evidence of effort solely against the micro-organism itself. Certainly, in the one case I studied, more elastic filaments were found in giant cells than were blastomycetes. It is probable that other waste tissue products also stimulate the giant cell production; and, finally, with such goodly numbers of the micro-organisms in a free state the question arises whether their enclosure may not really be only an occasional and chance affair by giant cells which have already been evoked by tissue products. There is evidence in this direction in the fact that in foci in which tissue destruction is

complete no elastic fibers will be found in a free state; that is, if present at all, every fiber will be enclosed by giant cells, whereas there are still blastomycetes aplenty which are not phagocytosed.

Blastomycetoid Bodies.—These have been encountered in two forms. As prepared by hematoxylin and eosin, the one stained rusty red, and showed details of structure the better, while the second stained blue. The red form occurred rarely, and we are inclined to look on it as the vital stage because its structural details are better. If this is true, their small numbers must indicate that the infection was on the wane. All

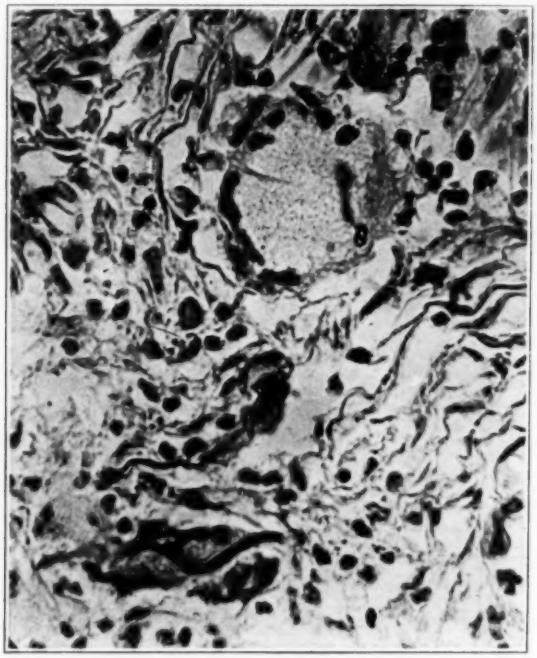

Fig. 5.—Elastic fiber as in Figure 4 but more definitely within giant cell (below); large giant cell above containing no inclusions.

of the red type were found within giant cells. They averaged from 30 to 40 microns in diameter, were spherical or elliptical, and had a thick double contour. Both the shell and the interior were structureless, but the shell had a much denser, glassy quality than the center In at least two instances a short segmented extension passed from one side like a handle, and in one of these the handle curved sufficiently in the section to be transversely sectioned at the extremity and give the appearance of a tube (Fig. 6). We regard this as a portion of a mycelium.

The Blue Form.—For the most part within giant cells, these were occasionally also to be found free in the granulation tissue. They were of about the same size as the red forms, but differed from them in that they were in several instances clustered (in giant cells) as though budding from a common or approximate point. Again a double contour could often be recognized, but never as sharply as with the red form. Often several lamellae could be made out in them (Fig. 9).

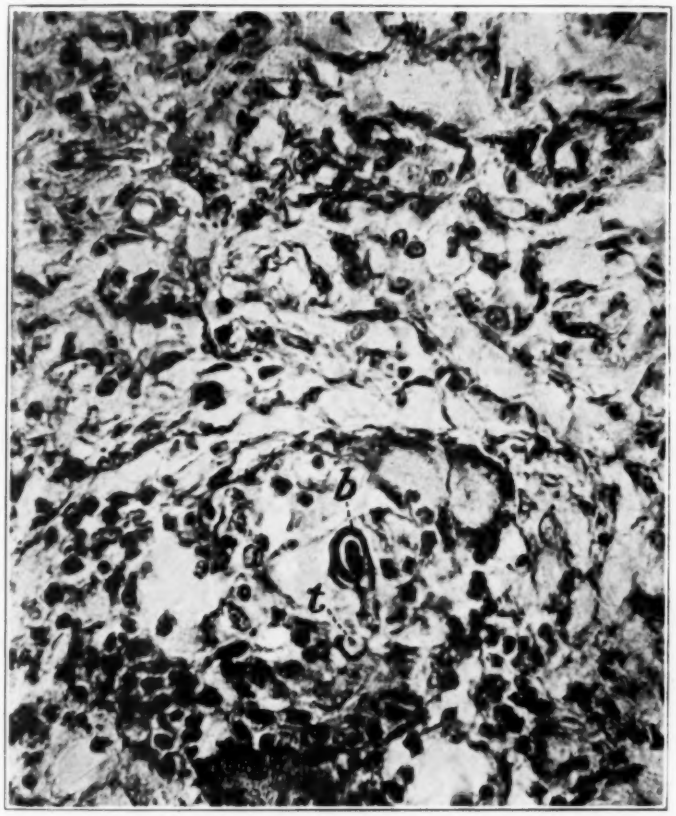

Fig. 6.—Highly magnified body; stained red with hematoxylin and eosin; two giant cells above and to the right of it. The "handled," downward extension from it is continuous with the transversely sectioned tube at *t* when focusing is done.

The most likely explanation of these is that they are calcified stages of the red forms, and therefore come within the characterization "psammoma bodies."

DISCUSSION

After a broad survey one concludes that this is a granuloma, and not a sarcoma, for there is far too much fibrous tissue between the capil-

laries to agree with the histology of sarcoma, and the spindle cells are too widely placed even to concede a fibrosarcoma.

We are not at all certain as to what organism is the exciting one. The blastomycetoid bodies seem to be in insufficient numbers to account for such extensive tissue production, unless there be other cyclic forms present which are not brought out by our methods of staining. In a

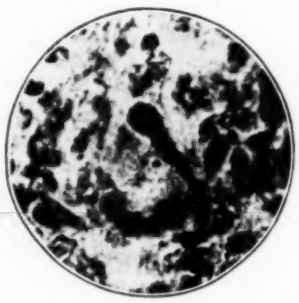

Fig. 7.—Body within giant cell; red with hematoxylin and eosin.

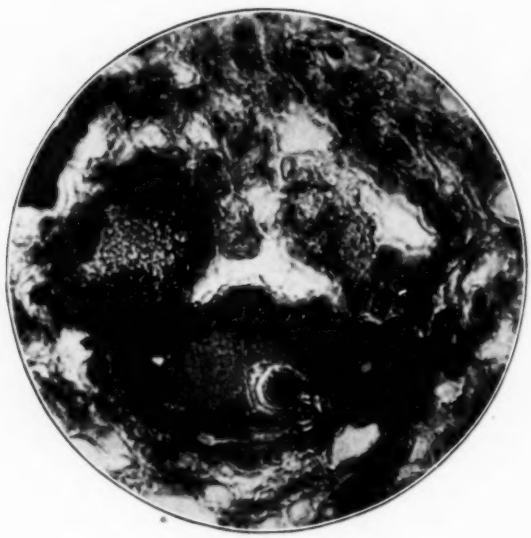

Fig. 8.—Body within giant cell; red with hematoxylin and eosin; double-contoured and showing shadowy "handle" passing toward the right.

similar manner the small tubercles are not sufficiently explainable on the basis of this being a case of tuberculosis because there is such a preponderance of vascular and hemorrhagic granulation tissue. If this be a true blastomycetoid infection it is a different one from Gilchrist's, for both the organism and the tissue reaction are distinctly different.

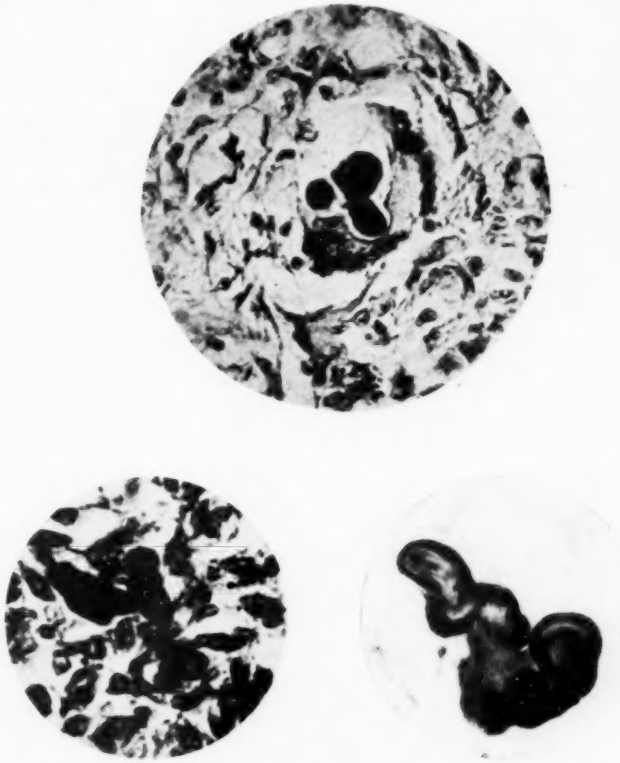

Fig. 9.—Calcified bodies. All stain blue with hematoxylin and eosin; both free and within giant cell. Note similarity of body in Figure 6 to portions of those in this illustration.

Fig. 10.—Body at *b*, calcified, small and probably young; within giant cell, together with its "handle." The handle is continuous above with coarse, deformed cylinder which may be mycelial.

We still have to be content with describing here the circumstances and findings in the case, and entirely omitting, in the absence of possible culture studies, any approach at conclusions concerning its micro-organismal causation. But of one thing we feel certain, and that is that what we have described as blastomycetoid bodies are not tissue products. If not the primary causes of this disease, at least they are secondary invaders. Their size and structure are too constant and definite to be anything else. We have carefully inquired for history of injury or the application of instruments or dressings whereby vegetable tissue could have been forced into the lesion. This has been positively denied.

SUMMARY

A fungous growth on the leg, clinically suspected as sarcoma, was first regarded on histologic examination as lupus vulgaris. Further study showed a vascular granulation tissue, tubercle-like granulomas and blastomycetoid bodies. Elastic fibers were found to have evoked foreign body giant cell production in both this and known cases of blastomycosis.

The cause of the lesion under consideration is left an open question, but it is insisted that the "bodies" are higher fungi and not degenerative tissue products or concretions.

IMPETIGO CONTAGIOSA

RESULTS OF CULTURES MADE OF THIRTY CASES WITH SPECIAL REFERENCE TO THE CHARACTER OF STREPTOCOCCI ISOLATED *

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BACTERIOLOGIC REVIEW

Impetigo (contagiosa) was definitely described as a clinical entity in 1864 and 1869 by Tilbury Fox.[1] Kohn,[2] in 1871, concluded that it was due to an organism of the hyphomycete group. In this he was supported by Behrend,[3] but this view has been generally abandoned in recent years. Demme,[4] in 1886, was the first to cultivate a diplococcus from a case of acute contagious pemphigus. Bockhart,[5] in 1887, concluded that impetigo was caused by *Staphylococcus pyogenes aureus* and *albus*.

In 1893, M. C. Leroux[6] took cultures from 120 children with cases of contagious impetigo. He obtained seventy positive cultures, finding divers varieties of *Staphylococcus pyogenes* and *streptococci*. He called attention to the contagious character of the disease and its appearance among children in the same family and after contact. Studying impetigo experimentally, he inoculated a series of children, reproduced typical lesions, and on reculture of the lesions found diplococci and the typical streptococci—but no staphylococci. He concluded that impetigo was caused by a special organism to which he gave the name "streptococcus of impetigo." He concluded that the staphylococci were superimposed organisms which rapidly substituted the streptococci and produced by secondary infection the several clinical manifestations. Davalos,[7] in 1895, gave as the exciting cause a pseudodiphtheria bacillus in symbiosis with a virulent coccus. This view has received little encouragement from later investigators.

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* From the Laboratory of Dermatological Research, Department of Cutaneous Medicine, University of Pennsylvania and the Department of Dermatology, Jefferson Medical College.

1. Fox, Tilbury: Brit. M. J., 1864, pp. 467, 495, 553, 607; J. Cutan. Med. **3**: 231 (Oct.) 1869.
2. Kohn, M.: Wien. med. Presse, 1871, p. 586.
3. Behrend, H.: Deutsch. med. Wchnschr., No. 48, 1884.
4. Demme, Bern: Verhandl. Cong. f. inn. Med. W., 1886, p. 336.
5. Bockhart, Max: Monatschr. f. prakt. Dermat., No. 11, 1887, p. 450.
6. Leroux, C.: Ann. de dermat. et syph., 1893, No. 4, p. 290.
7. Davalos, J. N.: Zentralbl. f. Bakteriol. **17**:38, 1895.

Balzer and Griffon [8] have analyzed fourteen cases of ecthyma and thirty-one cases of impetigo bacteriologically. They found the streptococcus in all. It was present in pure culture in the pus of unopened pustules as a diplococcus or as chains. On culture the organism showed all the classic characteristics of *Streptococcus pyogenes*. Injected into animals it caused erysipelas, abscess and fatal septicemia. Matzenauer [9] concluded, in 1900, that impetigo contagiosa and pemphigus neonatorum were identical and due to a staphylococcus.

In reference to pemphigus neonatorum it may be proper at this point to review the recent work of Cole and Ruh,[10] and Falls.[11]

Cole and Ruh, in an epidemic of nine cases of infantile pemphigoid (pemphigus neonatorum), isolated *Staphylococcus aureus* in pure culture in all cases in which the vesicles were unbroken. The epidemic started as a case of typical pemphigoid of the new-born which later changed into a clinical picture of dermatitis exfoliativa neonatorum; and as the etiologic agent was thus the same, they believed there should be no distinction between the two conditions. Impetigo contagiosa, they say, should be sharply differentiated from this infantile pemphigoid (pemphigus neonatorum) because of its different bacteriologic origin. They believed pemphigus neonatorum should be made reportable on account of its high mortality (25 to 50 per cent). They recommended autogenous vaccine.

Falls reported fifty-four cases of pemphigus neonatorum from the standpoint of bacteriology, but did not state from how many cultures were made. He concluded that *Staphylococcus aureus* was the cause.

In 1900, Sabouraud [12] divided impetigo cases into two main divisions—the vesicular type of Tilbury Fox and the pustular type of Bockhart—the first primarily due to a streptococcus which, as a rule, became secondarily associated with staphylococci after which the streptococci died out.

Gilchrist [13] has reported the results of cultivation in seventeen cases. *Streptococcus pyogenes* was obtained from every case, in ten cases in pure culture. In seven cases *Staphylococcus aureus* was also present, in one case *Staphylococcus citreus* and *albus*, and in another instance a pseudodiphtheria bacillus was present in addition to a streptococcus. Streptococci from only three cases were run through mediums and

8. Balzer and Griffon: Presse méd., Oct. 27, 1897, No. 89, p. 130.

9. Matzenauer, R.: Virchow-Hirsch. Jahrb. d. ges. Med. **25**:549, 1900.

10. Cole, H. N., and Ruh, H. O.: Pemphigoid of the New-Born (Pemphigus Neonatorum), J. A. M. A. **63**:1159 (Oct. 3) 1914.

11. Falls, F. H.: J. Infect. Dis. **20**:86 (Jan.) 1917.

12. Sabouraud, R.: Ann. de dermat. et syph. **31**:325, 1900.

13. Gilchrist, T. C.: Contribution to Science of Medicine by Pupils of W. H. Welch, 1900, p. 409.

identified definitely as *Streptococcus pyogenes*. In one instance he obtained a typical lesion by inoculating the chin with a pure culture of streptococci obtained from the same patient. This outbreak developed five days after the inoculation. These results agree in general with those obtained by Leroux, Balzer and Griffon, and Sabouraud. He concluded that his investigations seemed to indicate that impetigo contagiosa was caused by *Streptococcus pyogenes*.

Bender [14] concluded from cultural studies of twelve cases in 1907 that the cause of impetigo contagiosa was not the white staphylococcus but rather a streptococcus which appeared in chains and gave the typical medium reactions of a streptococcus.

According to Ernst Flehme:[15]

> In fifty-five cases of impetigo contagiosa investigated bacteriologically, streptococci in pure culture or mixed with staphylococci, according to the age of the lesion, were found. In every case, the organism was of the *Streptococcus longus* type. The organisms always showed hemolysis and acid formation on mannite-litmus-agar. The impetigo streptococci were pathogenic for white mice when large doses of the sediment of bouillon cultures were injected. At the site of injection, a circumscribed purulent lesion was formed. In man it was possible through superficial inoculation to form typical lesions of impetigo, from which the organism was recovered in pure culture. In 15 per cent. of the skins of normal persons, and in 89 per cent. of persons with impetigo, it was possible to demonstrate streptococci which could only be differentiated from the impetigo streptococci by a stronger red tint of mannite-litmus-agar, and hemolysis. The superficial inoculation of pure cultures of streptococci recovered from normal skin likewise produced an impetigo. In addition, scarification of healthy skin on which streptococci were demonstrable, led to the formation of impetigo.[16]

His conclusions were that:

> . . . the cause of impetigo is the attack on fertile ground of a large dose of impetigo streptococci. The normal skin appears to have a resistance to the organism. The skin of a patient with impetigo has a lessened resistance to the same organism, yet there remains some resistance. One may consider the impetigo streptococcus as a semiparasitic organism, that under certain circumstances and in certain localities, and with a diminished resistance of the skin, leads to the formation of the disease. In addition, during epidemics there may be an increased virulence of the organism which overcomes the normal resistance of the healthy skin.

AUTHORS' WORK

It will be seen from the foregoing that investigators of impetigo have gone no farther than to conclude that a streptococcus was causative or that a streptococcus was the organism most frequently and con-

14. Bender, E.: Arch. f. Dermat. u. Syph. **84**:59, 1907.
15. Flehme, E.: Dermat. Ztschr. **31**:111, 1920; abstr. Arch. Dermat. & Syph. **2**:761, 1920.
16. Quoted from abst., Arch. Dermat. & Syph. **2**:761 (Dec.) 1920.

sistently isolated from cases of impetigo. It is well known that the streptococcus group is a large one and varies greatly in pathogenicity and biologic characteristics, embracing such widely differing organisms as the almost entirely parasitic pneumococcus on the one hand and the semisaprophytic *Streptococcus fecalis* on the other. We have attempted to go further, that is, we have "analyzed" the different streptococci of impetigo, and have classified them as completely as possible in order to determine, if possible, whether the organisms thus obtained belonged to a single specific strain or whether different members of the streptococcus group were concerned. It occurred to us that the somewhat varying clinical pictures of impetigo might be connected with different strains of streptococcus—just as the markedly impetiginous one of the muddy Flanders battlefields was characterized by heavy *Streptococcus fecalis* incidence.

TECHNIC

We have made cultures from thirty cases of impetigo, all showing lesions clinically typical of this disease. When possible the cultures were made from the serum of unbroken lesions. If not possible, the lesion was scraped with sterile swabs until bloody serum was obtained. In those lesions which had broken and become crusted it was found that cultures were more often positive for streptococci when the swab was taken as deeply as possible. This was similar to the experience of the French bacteriologists with their cultures from wounds; they found that a superficial swab from a wound often resulted in a culture of staphylococci only and the missing of streptococci when they were present.

Swabs were cultivated immediately on 5 per cent. human blood-agar plates, the agar being 0.5 per cent. acid to phenolphthalein and made from fresh beef. After twenty-four hours' inoculation organisms present were picked and seeded for pure culture. Streptococci were repeated on blood agar and picked a second time to insure purity before running them through the carbohydrate mediums for classification. All sugar mediums were made up in bouillon (titrated 0.5 per cent.), to which was added blood serum and Andrade indicator according to the method outlined by Holman.[17]

We consider the use of liquid mediums especially important in the identification of the streptococcus group, and agree with the many observers who have stressed the point that solid carbohydrate medium with litmus as an indicator is entirely unsatisfactory for precise work. We attempted the use of solid medium with litmus on several strains and discarded the results, the main difficulty being that it was often

17. Holman, W. L.: Jour. Infect. Dis. **15**:209, 1914; ibid. **34**:377, 1916.

impossible to get a satisfactory growth, and it was often doubtful whether there was growth. Delicate color changes were difficult to interpret on solid litmus mediums with stab inoculations.

Along a different line we attempted to produce immune serum in rabbits for agglutination tests. We succeeded in obtaining antiserum which would agglutinate the strain used for inoculation (homologous antigen) in dilutions of 1:100, which was not satisfactorily high. Several strains of streptococci isolated were in a constant state of auto-agglutination, which was impossible to break up even by shaking with sand, and the results on these strains were of course unreadable. The general results of agglutination tests with immune serum agreed with the carbohydrate differentiation tests, that is, the several strains of streptococci which had similar carbohydrate reaction to the strain used for production of the serum were cross-agglutinated, while those with different carbohydrate reactions were not agglutinated. However, the auto-agglutination of several strains and the low agglutination titer (1:100) of serum produced make us hesitate to draw any definite conclusions as to specificity on the basis of our serologic reactions.

We have made no attempt to fulfil all of Koch's postulates, our animal experimentation work having been confined to the production of agglutinins in rabbits.

BACTERIOLOGIC FINDINGS

The bacteriologic findings in the thirty cases examined were: *Streptococci* were found in 24 cases (pure cultures in 10 cases); *Streptococcus pyogenes* 10, *Streptococcus anginosis* 11, *Streptococcus subacidus* 2, *Streptococcus fecalis* 1. *Staphylococci* were found 22 times in 16 cases (mostly associated with other organisms); *Staphylococcus albus* 16 times (2 pure), *Staphylococcus aureus* 6 times (never pure). *Pseudodiphtheria bacillus* was found 4 times, never pure. *Bacillus pyocyaneous* was found once and *Staphylococcus citreus* once.

As to the matter of simple streptococcic incidence, the foregoing data confirm the results of many other investigators who found that a streptococcus was almost invariably present in the lesions of impetigo. This and the successful inoculation tests of several workers convince us that the streptococcus is the causative organism. The staphylococci, pseudodiphtheria bacilli, etc., are secondary invaders.

From the standpoint of the different strains of streptococci, the data show that there are at least four concerned, and the probability is that on examination of a larger series of cases additional ones would appear. *Streptococcus anginosus* and *Streptococcus pyogenes* appear to be most numerous (and equally) important. We have followed the classification of Holman in our work. It will be noted that all the

streptococci which we found were hemolytic save one (*Streptococcus fecalis*), and this was encountered only once.

We have plotted out the various combinations of the different bacterial groups (hemolyzers, staphylococci, pseudodiphtheria), but there does not appear to be anything consistent or suggestive in the combinations to indicate anything of practical value.

In the six cases failing to give streptococci in culture the lesions were of long duration.

CONCLUSIONS

With proper precautions and under proper conditions streptococci may be obtained from nearly all cases of impetigo. If the full complement of streptococci is to be obtained on culture, it is necessary to take the material from an early and unerupted lesion. If this is not possible, it should be taken from the deep, redder parts from which all crusts have been removed.

Accepting as we do the conclusions of previous workers that impetigo is caused by streptococci, at least four different strains are concerned: *Streptococcus pyogenes, Streptococcus anginosus, Streptococcus subacidus* and *Streptococcus fecalis.*

Associated organisms, such as staphylococci, pseudodiphtheria bacilli, etc., are either extraneous or secondary invaders.

Streptococcus fecalis is not the factor in America that it was in Flanders, and there is little likelihood that it has been recently imported.

It cannot be predicted from the aspect of the clinical lesion (bullous, crusted or ecthymatous) what strain of streptococcus will be found on culture.

THE VIABILITY OF RINGWORM FUNGI IN DRY CUTANEOUS MATERIAL*

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This experiment was conducted to determine in a general way how long these fungi could remain viable in the surplus scrapings, hairs, etc., which had been preserved dry for future use in paper envelops in our laboratory files. The results would also yield some rough idea of how long the material might retain its infectiousness in those articles of clothing (slippers) and the toilet (brushes and combs) which are not always periodically cleansed.

The material consisted of hairs, crusts and scrapings in which, as a routine, fungous elements had already been demonstrated in potassium hydroxid solution as the clinical case presented. The surplus material was preserved in black photographic paper, enclosed in a white paper envelope and filed in a small drawer. Only a few specimens had been determined culturally. Plantings were made without previous alcoholization on Sabouraud's proof agar and without the addition of any restrainer.

The table shows the scope of the tests and the results:

RESULTS OF TESTS

	Number of Cases Examined	Number of Cases Giving Positive Culture	Percentage Positive	Remarks	Negative Results
Tinea capitis	7	2	29	M. lanosum viable 424 days; unidentified fungus viable 312 days	Material 354, 585, 664, 665 and 677 days old
Tinea cruris	9	3	33	Epidermophyton inguinale viable 145, 174 and 433 days	Material 173, 354, 394, 395, 673 and 683 days old
Favus	1	0	0	.....	Material 369 days old
Tinea corporis (circinata)	6	0	0	.....	Material 244, 311, 410, 458, 640 and 684 days old
Tinea unguium	2	1	50	Unidentified fungus viable 418 days	Material 180 days old
Totals	25	6			
Average	...	...	25		

*From the Laboratory of Dermatological Research, Department of Cutaneous Medicine, University of Pennsylvania.

COMMENT

The six cases of tinea corporis (circinata) yielded no cultures.

Three of the six successful growths were viable after 400 days (*E. inguinale, M. lanosum* and the unidentified fungus in the case of Tinea unguium).

One third of the epidermophyton cases were viable after more than five months. This explains the occasional clinical recurrences and indicates that the clothing should receive attention in unusual recurrent cases.

Viability was lost in the older specimens. There was no growth in the group of eight samples over 500 days old.

While the tenacity of life of some of these cutaneous fungi is remarkable, in general it is within definite bounds, should not be overrated, and cannot compare with that of our commoner saprophytic fungi like *Penicillium glaucum*, or many of the spore-bearing bacteria. In this connection it seems proper again to refer [1] to Dold's [2] work in China. He tested four lots of tinea cruris scales (which had been kept in sterile envelops) at several intervals. One lot failed to grow after twelve days, three after twenty days, and none grew after thirty days. As far as I am aware, difference in strains [3] has not been established for *Epidermophyton inguinale* to account for such variance in resistance as is shown by Dold's and my own work, nor does there appear to be any difference in the method of preserving the scales to account for the variability.

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1. Farley, D. L.: The Cultivation of Epidermophyton Inguinale, Arch. Dermat. & Syph. **2**:466 (Oct.) 1920.

2. Dold, Herman: China M. J. **34**:34 (Jan.) 1920.

3. Wende, G. W., and Collins, K. R.: A Contribution to the Study of Epidermophyton Inguinale, Arch. Dermat. & Syph. **3**:1 (Jan.) 1921. Black-gray and yellow types are described by these authors, but have not been confirmed. They also mention (p. 10) peculiar color changes in different subcultures ranging through gray, green, salmon-pink, grayish green and mouse-gray. In a personal communication Dr. Fred D. Weidman tells me that he has seen fructifications in contaminants which resemble those figured by these authors, and that from these and the descriptions he feels sure these "types" are separate species from Epidermophyton and are contaminants.

SYPHILITIC BACKACHE

A SYMPTOM OF SYPHILIS OF THE SPINAL CORD, LUMBAR MUSCLES AND VERTEBRAE WITH REPORT OF CASES *

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Among the many causes of backache, syphilis should be considered. Although backache of syphilitic origin is, in the majority of cases, a symptom of neurosyphilis, nevertheless, the subject may be more properly discussed by classifying backache as a symptom of syphilitic involvement of the spinal cord, lumbar muscles and vertebrae.

BACKACHE DUE TO SPINAL CORD SYPHILIS

Backache of syphilitic origin is in most instances a symptom of spinal cord syphilis. In this condition the underlying pathology is meningeal. The neurologic sensations are in reality produced by irritation of the posterior sensory roots, and these are irritated in turn by the thickened and inflamed cord membranes through which they pass. Although clinically it is impossible to determine whether these root symptoms are caused by a root neuritis which is independent of the meningitis or by the meningitis and its consequent effect on the roots, as a matter of pathologic observation, rarely, if ever, isolated involvement of either the roots or cord occurs, although frequently a disproportion exists between the involvement of the spinal roots and the cord itself.

A root neuritis may arise in other ways. The roots may be compressed by the specifically inflamed membranes, or the inflammation may extend from the membranes into the roots themselves. In this way the individual nerve fibers are secondarily involved. Inflammation may also arise from the specifically diseased vessels. In addition to these forms of involvement, gummas may become localized in the roots. In very rare instances, a root neuritis may arise from a syphilitic periostitis of the vertebrae.

In a specific meningitis involving the cord, the posterior surface is not only more frequently involved than the anterior surface, but the meningitis is more extensive and more intense in this region. It is usually most severe in the dorsal region, since there the spinal cord has the least resistance.

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* Read before the College of Physicians and Surgeons, Section on General Medicine, Philadelphia, Oct. 25, 1920.

A syphilitic spinal meningitis may be acute, subacute or chronic, and may be present from the exanthematous period of the disease until many years later. The headache and backache encountered in the acute secondary period of syphilis are frequently meningeal in origin. This was recognized prior to the introduction of lumbar puncture by Quincke in 1891. Notably, Lang, in 1880, and others referred to these, as well as to other symptoms, as arising from spinal meningeal irritation, and pointed out that occasionally the meningeal irritation passes into a meningitis. In the light of present knowledge arising from spinal fluid examination in the acute stage of syphilis, we know that the spinal fluid at this time frequently shows a varying degree of abnormality, which doubtless manifests the severity of meningeal involvement to which the older writers referred.

Backache, a symptom of spinal cord syphilis, is usually a part of the meningeal syndrome. The meningeal symptoms, in general, are essentially the same as in the other forms of meningitis. These symptoms are: pain, which may exist between the shoulders or in the back, paresthesias, painful sensations and acute attacks of girdle pain, which radiates anteriorly around the lateral part of the chest. Hyperesthesia is present, and the tendon and skin reflexes are increased. Some writers (Erlenmeyer, Siemerling, Oppenheim and Lang) have emphasized the variability of the patellar reflexes. They are alleged to vary from an entire absence to an increase in short periods of time from day to day, or longer. The explanation given for this is the variation in swelling of the syphilitic infiltrated tissue which compresses the fibers which are responsible for the patellar reflexes.

It is frequently mentioned, first perhaps by the older French syphilologists, that the pain, as heretofore noted, is worse at night. Indeed, this has been stated in reference to other forms of syphilitic pathology. This statement has apparently been copied from textbook to textbook and, in my experience, so far as present day syphilitic pathology is concerned, this tautology does not constitute reality. In addition to these sensory irritative symptoms, there are also symptoms of motor irritation in the form of tension in the musculature, which may increase the contractions. Backache, stiffness and tiredness are the chief complaints of the patient. One finds clinically a rigidity of the back, combined with a localized or diffuse tenderness to percussion of the vertebral column. In addition, movement may be painful.

This syndrome may exist in a varying degree and for a long period of time. The clinical picture may be modified by an extension of the pathologic condition to the cord proper. The pathologic lesions may be numerous and disseminated, and the clinical picture is therefore a variable one. Indeed, further discussion would involve a discussion of

the subject of cerebrospinal syphilis. However, it may be mentioned that after the pathologic process has attacked the conduction tracts, symptoms of sensory and of motor involvement will of necessity follow, and the additional clinical features of meningomyelitis supervene.

In many of the cases under consideration, besides the objective symptoms of neurosyphilis already mentioned, evidence of involvement of other portions of the neuraxis may be present. An isolated involvement of the spinal cord in syphilis is exceptional, considerably more so pathologically than clinically. Fournier reports more than five times as many cases of cerebrospinal syphilis as the pure spinal type. Erb states that in his experience spinal cord syphilis of the nontabetic type occurs only one tenth as often as tabes.

The response to antisyphilitic therapy in these cases is proportional to the acuteness and duration of the pathologic process. The result of treatment and the prognosis are worse when the condition has progressed to irreparable secondary changes in the cord. An appropriate plea can therefore be made for a thorough history and examination of every syphilitic in order that treatment may be administered in the meningeal stage of neurosyphilis. The presence of a negative blood Wassermann reaction in this class of case would not be remarkable. If this laboratory evidence is taken as a criterion of the status of the syphilitic infection, and important subjective and objective evidence of syphilitic involvement of this part of the neuraxis, which is relatively not a silent one, is not searched for, it may insidiously progress to a parenchymatous involvement. The spinal fluid in these cases is always positive. The pleocytosis in a measure depends on the severity of meningeal involvement. The Wassermann reaction may be positive in both high and low dilutions of spinal fluid. The colloidal gold reaction shows changes in the nature of a syphilitic curve.

Cases 1, 2 and 3 are illustrative of backache due to spinal cord syphilis.

BACKACHE DUE TO SYPHILIS OF THE LUMBAR MUSCLES

Under the heading of muscle involvement may be placed the backache which may be present in the acute secondary stage of syphilis. In this stage, it is either meningeal in origin, or a toxic expression of the acute spirochetemia. In the latter instance, it is part of the malaise present in the rather severe acute cases. It may be the chief complaint of the patient and may appear for some time prior to the secondary eruption. There is backache of this description in Case 4. The patient complained of malaise, headache and backache of several weeks' duration. When first seen, he was obviously sick—the temperature ranged from 102 to 105 F., for the first three days, and from 104 to 106 the

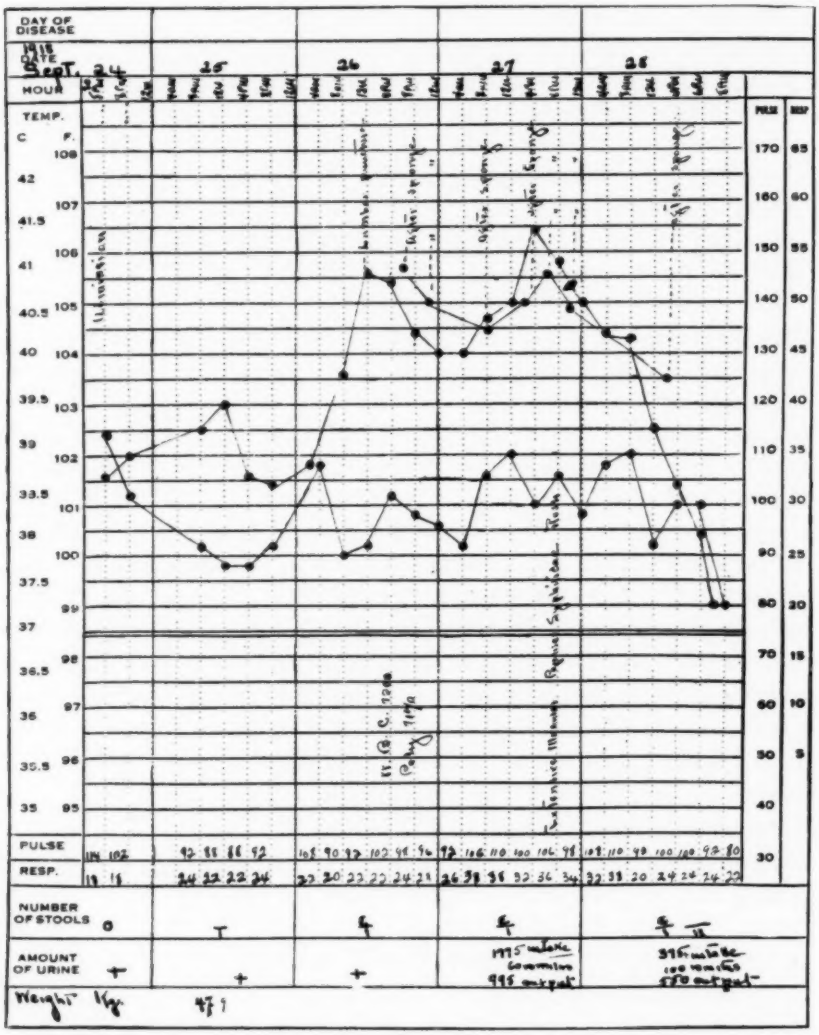

Fig. 1.—Temperature curve in Case 1 of acute secondary syphilis. Within thirty hours after the appearance of the eruption, the temperature dropped from 106.5 F. to 99 F. This fall in temperature by crisis after cutaneous manifestation is characteristic of the fever in acute secondary syphilis.

following twenty-four hours (Fig. 1). It is of interest to note that on the appearance of the diffuse maculopapular syphilid, the temperature dropped by crisis to normal. An internist, who saw the patient prior to the appearance of the eruption, made a tentative diagnosis of typhoid fever. This disease was rightly suspected from the history, the appearance of the patient, the temperature curve, the relatively lowered pulse rate, the enlargement of the spleen and the blood picture. In addition, a few scattered, faint macular lesions suggested the roseola of typhoid fever. These lesions were early appearing macular syphilids. Although some of the characteristic symptoms of typhoid fever were lacking, this would not have precluded the diagnosis of typhoid since the clinical picture of the disease is not always definite. The case is an instance of the simulation of typhoid fever by acute secondary syphilis.

In view of the negative spinal fluid in Case 1, it may be pointed out in passing that lumbar puncture, performed in the acute untreated stage of syphilis, is not without untoward consequences, that is, if the puncture is faulty and blood is obtained. This statement is based on experimental knowledge that blood, as well as other substances, when injected into the spinal fluid, acts as an irritant to the meninges and apparently causes a definite let-down in the meningeal-choroidal barrier between the blood and spinal fluid. In this way it is possible experimentally to infect the neuraxis with an infection from the blood. Indeed, simple lumbar puncture may constitute such an irritant. This possibility has been demonstrated by the work of Flexner and Amos [1] on poliomyelitis, Weed [2] and his associates on streptococcic infection in cats, and by Mehrtens and MacArthur's [3] studies of the arsenical content of the spinal fluid after various methods of treatment.

Backache due to syphilis may rise through syphilitic involvement of the lumbar muscles, although these muscles are not the ones commonly involved. However, it is possible for syphilis to involve any group of muscles.

Very little has been added to our clinical knowledge of syphilitic disease of the muscles since its first recognition by Theodosius in 1553. Excluding the muscles of the tongue and heart, syphilitic involvement of the muscles is rare.

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1. Flexner, S., and Amos, H. L.: The Relation of the Meninges and Choroid Plexus to Poliomyelitic Infection, J. Exper. Med. **25**:525 (April) 1917.

2. Weed, L. H.; Weyeforth, Paul; Ayer, J. B., and Felton, L. D.: The Production of Meningitis by Release of Cerebrospinal Fluid, J. A. M. A. **72**:90 (Jan. 18) 1919.

3. Mehrtens, H. G., and MacArthur, C. G.: Therapy of Neurosyphilis, Judged by Arsenic Penetration of Meninges, Arch. Neurol. & Psychiat. **2**:369 (Oct.) 1919.

Backache, and indeed myalgia in other parts, occurring in the acute stage of syphilis, is more likely a toxic expression of the acute spirochetemia, than a myositis.

Comparatively early in the infection, a diffuse interstitial myositis may appear. This condition may affect any muscle but particularly one of the flexors and especially the biceps. It is insidious in onset and characterized by pain, which usually develops concomitantly with contraction and swelling of the muscle. The patient complains of pain and inability to straighten the joint. The muscle is tender and feels firm and thickened, and an attempt actively to straighten the joint causes pain. Such an involvement is seen in Figure 2. Later in the disease, the commoner form of syphilis of the muscle, a gumma, may form

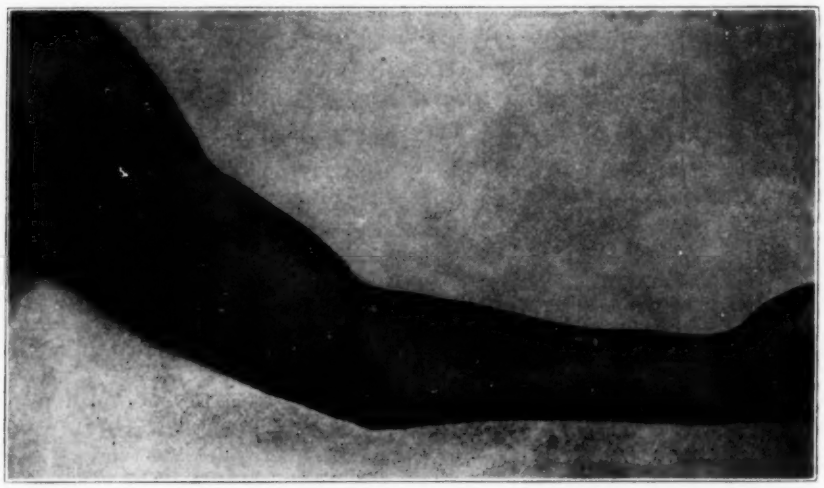

Fig. 2.—One type of syphilitic myositis involving the biceps. The history of syphilitic infection was negative. The involved muscle was swollen, painful on motion and tender to the touch. The onset was gradual and apparently causeless; other clinical evidences of syphilis were present. The blood Wassermann reaction was + + + +. After antisyphilitic therapy all subjective and objective symptoms disappeared. No local treatment was applied.

in one or more muscles. Those usually involved are the muscles of the arm and leg. The involvement may be localized or generalized or a combination of the two forms. In the localized form, a firm infiltration, accompanied by pain, occurs within the muscle.

The gummatous masses may break through the skin, resulting in an ulcer, or they may retrogress, causing a contracted or shrunken muscle. In the generalized form, there are pain and swelling of the muscle, which is firm to the touch. The muscle may become adherent to surrounding structures, causing impairment of motion. When the two

forms are combined, individual gummas are palpable and the muscle becomes uneven in places and shortened; at other points, the gummas may break down, causing ulceration and suppuration. Rarely the whole process ends in calcification and ossification.

BACKACHE DUE TO SYPHILIS OF THE VERTEBRAE

Although syphilis frequently involves the osseous system, notably the skull, clavicle and tibia, it rarely involves the vertebrae. Syphilitic involvement of the vertebrae is most often seen in the cervical region. Indeed, some writers view with skepticism its alleged occurrence in the dorsal and lumbar regions. Many of the reported cases of syphilis of the vertebrae have been mistaken for tuberculosis, and Leyden [4] rightly states that the diagnosis of syphilitic vertebral exostosis has been too lightly made. However, there have been reported a number of authentic cases of syphilis of the vertebrae, including the dorsal and lumbar regions, in which the diagnosis was confirmed at necropsy.

In 1904, Neumann [5] analyzed fifty-five cases, which he collected from the literature. The cervical region was involved in 65 per cent. of the cases, and the dorsal and lumbar regions in 31 per cent. Ziesche,[6] in 1911, analyzed a total of eighty-eight cases reported in the literature. The cervical region was involved in 69 per cent. of the cases and the dorsal and lumbar regions in 23 per cent. In 1915, Hunt [7] reviewed the subject, with a report of four cases, which made a total of 100 authentic cases reported in the literature.

The cervical region is more frequently involved because of its proximity to the cranial bones, resulting in an extension of the disease from this region. The cervical vertebrae may also become involved through a direct extension from pharyngeal gummas.

Unlike tuberculosis, syphilis is more likely to affect the spinous and transverse processes than the bodies of the vertebrae. Pathologically, such involvement is seen as a periostitis and osteitis, which may progress to necrosis and sequestration of bone. There is considerably less likelihood of pus formation with the development of a "cold abscess," as seen in tuberculosis of the vertebrae.

In the symptomatology of this disease, there is no characteristic symptom which serves to distinguish it from other pathologic condi-

4. Leyden, E.: Ueber ein Fall von syphilitischer Wirbelerkrankung, Berl. klin. Wchnschr. **26**:461-462, 1889.

5. Neumann, I.: Ueber syphilitischen Erkrankungen der Wirbelsäule, Wien. med. Presse **45**:14-19 (bibliography), 1904.

6. Ziesche, H.: Ueber die syphilitischen Wirbelentzündung, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **22**:357-388 (bibliography), 1910-1911.

7. Hunt, J. R.: Syphilis of the Vertebral Column, Am. J. M. Sc. **148**: 164-179 (bibliography), 1914.

tions of the spine. The onset may be acute, or chronic. Pain is the predominating symptom. It may be dull and confined to the involved vertebrae, or acute and lancinating, following the distribution of the secondarily involved nerve roots. A secondary involvement of the spinal cord and its membranes occurs less frequently than an involvement of the brain from disease of the skull. Hunt states that neural complications occurred in 25 per cent. of the 100 cases reported in the literature up to 1915.

Some writers say that the pain is worse at night. On examination, tenderness and rigidity are found to be present over the involved area and there is obliteration of the normal vertebra curve. Deformity may

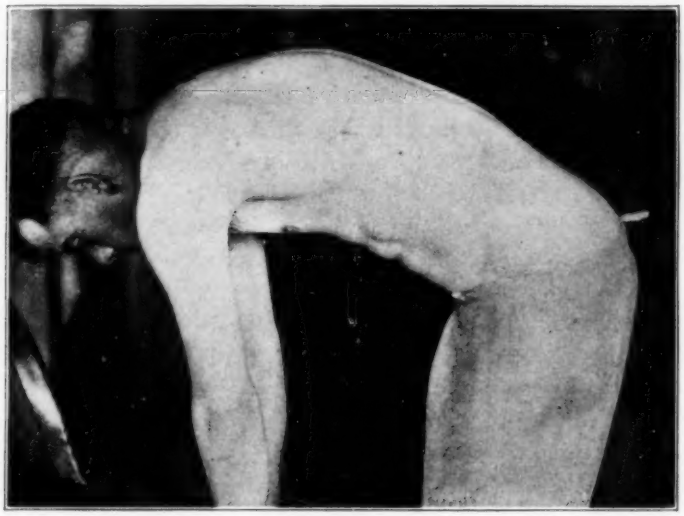

Fig. 3 (Case 5).—Obliteration of the dorsolumbar curve. Roentgenographic examination revealed necrosis of the body of the fifth lumbar vertebra, which was probably tuberculous, the symptoms of which appeared after syphilitic infection.

occur, which, when present, is consistent with the degree of pathologic involvement.

The differentiation of syphilitic involvement of the vertebrae from tuberculosis is, in some cases, difficult. The foregoing considerations are differential features. The roentgen ray is a valuable means of establishing a differential diagnosis. Indeed, in most cases it is the only way in which a diagnosis can be made.

If backache in a syphilitic is due to some pathologic involvement of the lumbar vertebrae, it is considerably more likely to be tuberculous than syphilitic. This is particularly true if syphilis has been recently acquired, since this disease is likely to activate latent tuberculosis. The

association of the two diseases is a very baneful one. Sergent [8] presents considerable clinical evidence to show that syphilis plays an important part in the causation of tuberculosis in its many clinical manifestations. In this regard I may appropriately recall the following statement of Landouzy: "La syphilis fait le lit de la tuberculose," and that of Fournier, who stated that he would not hesitate to inscribe syphilis in the etiologic chapter of pulmonary tuberculosis.

In view of these considerations it becomes apparent how easily tuberculosis of the vertebrae, existing in a syphilitic, can be mistaken for syphilis.

Improvement following antisyphilitic treatment does not prove the syphilitic nature of the pathologic condition, since tuberculous lesions in a syphilitic are frequently improved after such treatment. Such an instance is seen in Case 5 (Fig. 3) of a man, recently infected with syphilis, who complained of backache. There were tenderness and rigidity of the lower lumbar region, and the roentgenogram disclosed necrosis of the body of the last lumbar vertebra. The appearance suggested tuberculosis, rather than syphilis. The backache improved following treatment with arsphenamin, mercury and iodid.

Nonna [9] reports cases of vertebral necrosis in syphilitics, the subjective symptoms of which disappeared following antisyphilitic therapy. However, later the patients died of pulmonary tuberculosis, and necropsy demonstrated the vertebral involvement to be tuberculous in nature.

BACKACHE DUE TO SYPHILITIC SYNOVITIS OF THE SPINAL JOINTS

In addition to a syphilitic involvement of the vertebrae, backache may be caused by a synovitis of the spinal joints. This involvement is perhaps the commonest lesion in syphilis of the spine. Indeed, Whitney and Baldwin [10] have frequently observed its presence in syphilitics. In their series of 100 syphilitics examined for joint lesions, with special reference to the condition of the spine, they observed twenty-six patients with normal spines. Six patients presented doubtful findings, the remaining sixty-eight patients presented spinal abnormalities of some kind; of these, all but four were of a type which they considered more or less characteristic of syphilis.

A syphilitic synovitis occurs relatively early in the disease, although the deformity and stiffness it produces doubtless remain indefinitely.

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8. Sergent, Emile: Syphilis et Tuberculose, Paris, Masson et Cie, 1907; Presse méd. **16**:657 (Oct. 14) 1908.

9. Nonna, Max: Syphilis and the Nervous System, Ed. 2, Philadelphia, J. B. Lippincott Company, 1916, p. 228.

10. Whitney, J. L., and Baldwin, W. I.: Syphilis of the Spine, J. A. M. A. **65**:1989 (Dec. 4) 1915.

Usually three or four vertebrae are affected, although the process may attack more, indeed the whole dorsal region. Pain and backache are not prominent symptoms but rather deformity, localized stiffness and hypotonicity of the uninvolved spine, pelvic and hip joints. Roentgen-ray examination of the spine in this condition is negative.

The syndrome of this process as described by Whitney and Baldwin is as follows: Deformity when present consists of a prolongation of

Fig. 4.—Syphilitic synovitis of the spinal joints, showing hypotonicity and obliteration of the normal dorsolumbar curve.

the dorsal curve into the dorsolumbar region, where normally there is a concavity, or a flattening. There is a localized stiffness, at first due to spasm, and later to adhesions. Hypotonicity of the ligaments and muscles of the sacro-iliac joints and of the hips is a predominating symptom. This is manifested by the ease with which the patient can place the palms on the floor with knees straight (Fig. 4). This symptom is more marked in the cases of neurosyphilis. It is interpreted by Whitney and Baldwin as a sign of syphilis rather than as a sign of tabes, which is the usually accorded interpretation.

The two symptoms, localized stiffness and hypotonicity, are regarded by Whitney and Baldwin as almost pathognomonic of syphilis. One patient, a syphilitic (Fig. 4) presented the foregoing symptoms of syphilitic synovitis of the spine. She complained of backache. There was obliteration of the normal spinal curve with areas of restricted mobility, together with a marked degree of hypotonicity which is well shown in the illustration. The blood Wassermann was ++++. There was no clinical evidence of neurosyphilis although the spinal fluid was not examined. A roentgen-ray examination of the spine was negative.

REPORT OF CASES

BACKACHE—SPINAL CORD SYPHILIS

CASE 1.—*History.*—A man, aged 48, gave a history of a genital lesion twenty years before for which only local treatment had been received. He had been married twelve years. His wife was living and was said to be well. There were no living children, although there had been a stillbirth ten years before, but there had been no miscarriages. The chief complaint was constant backache, of from three to four years' duration, localized in the lower lumbar region. He had been treated by many physicians. He complained also of headache. There were no other subjective symptoms of neurosyphilis.

Physical Examination.—This disclosed nothing of any importance excepting leukoplakia of the buccal mucous membrane.

Neurologic Examination.—The pupils were unequal, irregular in contour, and reacted sluggishly to light. The patella reflexes were exaggerated. The blood Wassermann reaction was ++++. The spinal fluid contained 56 lymphocytes per c.mm.; globulin was positive, and the Wassermann reaction with 0.8 c.c. was ++++. The colloidal gold reaction was 0013321100.

Treatment.—After arsphenamin and mercurial treatment, the backache improved. It finally disappeared during the continuation of treatment.

CASE 2.—*History.*—A woman, aged 38, who had been married thirteen years, had lost one child at the age of 3 months; there had been no miscarriages. Salpingo-oophorectomy had been performed nineteen years before. The chief complaint was backache, which had been persistently present for the last eight months. The backache involved the lower lumbar and sacral region, and at times there were sharp shooting pains radiating anteriorly around the lower costal areas. She had had headache for about the same period of time.

Neurologic Examination.—The pupils were irregular and unequal. Light and accommodation reflexes were absent in the right eye. The left eye reacted to accommodation, but did not react to light. The biceps, triceps and patellar reflexes were exaggerated. There was no Babinski sign or ankle clonus. There were no sensory disturbances and no paralysis. She had good sphincter control. The blood Wassermann reaction was ++++. The spinal fluid contained 100 lymphocytes per c.mm.; globulin was positive, and the Wassermann reaction with 0.8 c.c. was ++++. The colloidal gold reaction was not made.

Treatment.—Following the administration of arsphenamin, mercury and potassium iodid, there was considerable improvement of subjective symptoms.

CASE 3.—*History.*—A woman, aged 32, had been married sixteen years. Her husband was living and alleged to be in good health. There were two living

children. She had had three miscarriages. Her chief complaint was acute spasmodic pain in the sacral and right gluteal regions. These had been of sudden onset two weeks before with acute stabbing pains in the right hip which radiated downward over the gluteal region into the thigh. She had had backache for some weeks. At times she experienced paresthesia in the lower extremities.

Neurologic Examination.—The pupils were equal and regular in size and reacted to all reflexes. The patellar reflexes were exaggerated. There was no ankle clonus or Babinski reflex. She had good control of the sphincters. There was no loss of muscular power. The blood Wassermann reaction was + + + +. Spinal fluid examination revealed 125 lymphocytes per c.mm. The globulin was positive, and the Wassermann reaction with 0.8 c.c. was + + + +. The colloidal gold reaction was not made.

Treatment.—The subjective symptoms entirely disappeared following antisyphilitic treatment.

BACKACHE—ACUTE SECONDARY SYPHILIS

CASE 4.—*History.*—A Filipino, aged 24, gave a history of headache, backache, arthralgia, and malaise of about three weeks' duration. He had had a genital lesion for from five to six weeks.

Physical Examination.—The patient was frail, underweight and obviously sick. The mouth, teeth and tongue were negative. The throat was congested. Examination of the heart and lungs disclosed nothing of any importance. There was enlargement of the lymph nodes, excepting the epitrochlear and occipital. Examination of the abdomen disclosed an enlargement of the spleen. There were a few scattered macular lesions suggestive of the roseola of typhoid fever. The bones and joints were negative. There was a lesion on the shaft of the penis, which was ulcerated, nonindurated and crusted. The temperature and pulse curves are given in Figure 1. A tentative diagnosis of typhoid fever was made pending laboratory studies.

Laboratory Examination.—Blood culture was negative. The Widal test was negative. Blood count revealed: leukocytes, 7,200, and polymorphonuclears, 71 per cent. The urine contained a trace of albumin and granular cysts. Dark-field examination of the genital lesion was negative. The patient had previously applied calomel. Dark-field examination of macular lesions was positive. The serum Wassermann reaction was + + + +. Spinal fluid examination revealed: cells, none; globulin negative; Wassermann reaction with 1 c.c. negative, and colloidal gold reaction 0011100000.

From the laboratory findings and subsequent clinical observation, the diagnosis of secondary syphilis became obvious.

BACKACHE—VERTEBRAL NECROSIS, SYPHILITIC (?)

CASE 5.—*History.*—A man, aged 26, with no history of tuberculosis in the family, gave a negative history, excepting for a chancre three years before which was followed by a secondary eruption. At that time, he received one injection of neo-arsphenamin and mercury by mouth for the following year. He had had no further treatment and no subjective symptoms until three months before, since which time he had been complaining of backache. The backache was of the nature of a dull localized pain in the lower lumbar region. It was worse when he was on his feet. He had no other complaint.

Physical Examination.—There was no evidence of pulmonary tuberculosis and no neurologic abnormality. There was a scar on the penis, and a gen-

eral adenopathy. Muscular rigidity was present in the lower lumbar region and there was an obliteration of the normal dorsal and lumbar curve (Fig. 3). There was tenderness on percussion of the lower lumbar vertebrae. Pain was present on jarring. The blood Wassermann reaction was + + + +. A roentgenogram of the lower lumbar vertebrae disclosed a necrosis of the body of the fifth vertebra, with considerable involucrum formation on the right. The roentgenogram suggested tuberculosis rather than syphilis.

SUMMARY

Syphilitic backache is classified as a symptom of syphilitic involvement of the spinal cord, lumbar muscles and vertebrae. In the majority of instances, it is a symptom of spinal cord syphilis.

Syphilitic backache, a symptom of syphilis of the spinal cord, is meningeal in origin and due to irritation of the posterior sensory roots. This involvement may be acute, subacute or chronic, and may be present from the exanthematous period of the disease until many years later. The symptom backache is a part of the meningeal syndrome. These symptoms in general are essentially the same as those in other forms of meningitis: pain, which may exist between the shoulders or in the back, paresthesias, painful sensations and acute attacks of girdle pain which radiate anteriorly around the lateral part of the chest. Hyperesthesia is sometimes present, and the tendon and skin reflexes are increased. In addition, there are symptoms of motor irritation. Backache, stiffness and tiredness are the chief complaints of the patient. Clinically, in addition to these neurologic abnormalities, there is rigidity of the back, combined with localized tenderness on percussion of the vertebral column. Other objective evidences of neurosyphilis are usually present, since an isolated involvement of the spinal cord is exceptional.

The usual spinal fluid findings in this condition are given. Case histories illustrating this type of syphilitic backache are presented.

A plea is made for a thorough history and clinical examination of every syphilitic in order that treatment may be administered in the meningeal stage of neurosyphilis rather than in the parenchymatous stage.

Backache Due to Syphilis of the Lumbar Muscles: The backache which is sometimes present in acute secondary syphilis is placed under this heading, although it is a toxic expression of the acute spirochetemia rather than syphilitic myositis. Syphilis of the muscles is discussed and various clinical types are presented.

Backache Due to Syphilis of the Vertebrae: A syphilitic involvement of the vertebrae is usually seen in the cervical rather than in the lumbar region. A brief review of the literature of syphilis of the vertebrae is given.

Syphilis is more likely to affect the spinous and transverse processes than the bodies of the vertebrae. The pathology of this condition is given. "Cold abscess" formation, which is usually present in tuberculosis, is considerably less likely to be encountered in syphilis.

In the symptomatology of this process there is no characteristic symptom which serves to distinguish it from other pathologic conditions of the spine. A secondary involvement of the spinal cord and its membranes is less likely to occur in syphilis than in tuberculosis.

The Differential Diagnosis of Syphilis of the Vertebrae: Syphilis may activate latent tuberculosis. This possibility must be considered in the presence of a pathologic involvement of the vertebrae in a syphilitic. The therapeutic test in these cases is not conclusive since tuberculous lesions in a syphilitic are improved after antisyphilitic treatment. A case history is given in which the necrosis of the lumbar vertebrae was probably tuberculous rather than syphilitic.

Backache may also be caused by a synovitis of the spinal joints. This involvement is the commonest lesion in syphilis of the spine. The syndrome of the process is this: Deformity, when present, is seen in a prolongation of the dorsal curve into the dorsolumbar region, where normally a concavity exists, or a flattening. There is a localized stiffness, at first due to spasm, and later to adhesions. Hypotonicity of the ligaments and muscles of the sacro-iliac joints and hips is a predominating symptom.

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XXIII.—IMMUNITY STUDIES IN EXPERIMENTAL SYPHILIS

INFECTIVITY AND SURVIVAL OF SPIROCHAETA PALLIDA IN RABBITS, WITH OBSERVATIONS ON SOME STRAINS FROM LATENT SYPHILIS

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Local immunity, or a better term, resistance to reinoculation in syphilis has been established as a fact both experimentally and clinically. Information is lacking with regard to the behavior of *Spirochaeta pallida* which have been exposed to such influences as might logically be assumed to modify the course of an infection in the animal body. It has been shown in a previous study [1] that syphilis in man, when latent and outwardly inactive, can be associated with the presence of *Spirochaeta pallida* in the glands and in the semen. In the experimental animal this question has been approached as a control on the problem in man, and results, such as localization in certain glands and preliminary observations bearing on latency in experimental syphilis, have been recorded in another place.[2] The brilliant studies of Brown and Pearce [3] which were made in connection with the therapeutic action of drugs have supported such findings independently. All phases of the problem which deal with cyclic changes in the course of infection in syphilis, the regression of lesions and the factors tending toward and modifying a condition known as latency, are intimately linked with the wider and more fundamental aspect of immunity. Whatever knowledge is to be gained from a study of the behavior of different strains of *Spirochaeta pallida* in animals may find some application to the

* Work done under a grant from the U. S. Interdepartmental Social Hygiene Board, Washington, D. C.

* Studies, observations and reports from the dermatological department of the Barnard Free Skin and Cancer Hospital and the Washington University School of Medicine, St. Louis, Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

1. Eberson, F., and Engman, M. F.: An Experimental Study of the Latent Syphilitic as a Carrier, J. A. M. A. **76**:160 (Jan. 15) 1921; Engman, M. F., and Eberson, F.: XXI.—A Biologic Study of Latency in Syphilis, Arch. Dermat. & Syph. **3**: Pt. 1, 347 (April) 1921.

2. Eberson, F.: Dissemination of Spirochaeta Pallida in Experimental Syphilis, Arch. Dermat. & Syph. **3**:111 (Feb.) 1921.

3. Brown, W. H., and Pearce, L.: J. Exper. Med. **31**:749 (June) 1920.

solution of the general problem. This paper represents, therefore, a report of certain findings which were incidental to the immunity studies now in progress.

There are certain difficulties involved in an attempt to study factors which may be likely to alter the virulence of an infectious organism. In the first place, we have no reliable criteria by which to measure the infective power of different strains of *Spirochaeta pallida*. If the incubation period is to be taken as a guide, then factors such as dosage, for example, must be subject to control and others be kept constant in order that results may be comparable. When, as in the case with syphilis in the rabbit, it becomes difficult to control certain fortuitous elements, the measure of accuracy is lessened considerably. Again, the difference in individual strains of spirochetes tends to confuse the picture so that the property of generalization, which some strains may possess, cannot be relied on for the degree of virulence. To make matters more complex, this manifestation seems to be influenced further by artificial procedures which are brought to bear on the primary focus of infection, as has been shown by Reasoner,[4] and Brown and Pearce,[5] and noted in our own studies.

ANIMAL PASSAGE AND ITS BEARING ON THE QUESTION OF VIRULENCE

The point of departure for the experiments which are embodied in the present report was the oft repeated opinion of most investigators that passage through animals enhances the virulence of *Spirochaeta pallida*. This idea was first promulgated by Uhlenhuth and Mulzer.[6] Opposed to this view are the studies of Zinsser, Hopkins and McBurney,[7] who found no apparent increase of infective power, although they admitted certain fluctuations due to factors in the technic which they employed. Reasoner,[4] also, has stressed certain points which may modify the success of inoculation with material from syphilitic sources. However, with the exception of Brown and Pearce,[8] investigators have ignored heretofore the possible importance of even a rough quantitative procedure in the determination of differences in virulence of strains which were used in the experiments. When it is desired to obtain successful "takes," a technic such as Brown and Pearce have described meets the requirements. For the purpose, how-

4. Reasoner, M. A.: Some Phases of Experimental Syphilis, J. A. M. A. **67**:1799 (Dec. 16) 1916.

5. Brown, W. H., and Pearce, L.: Arch. Dermat. & Syph. **2**:675 (Dec.) 1920.

6. Uhlenhuth, P., and Mulzer, P.: Arb. a. d. k. Gsndhtsamte **44**:307, 1913.

7. Zinsser, H., Hopkins, J. G., and McBurney, M.: J. Exper. Med. **23**:329 (March) 1916.

8. Brown, W. H., and Pearce, L.: J. Exper. Med. **31**:475 (April) 1920.

ever, of studying the survival in vivo of strains taken from experimentally infected animals, further refinements are necessary, if the period of incubation is to be taken as an index of any value. Repeated passage of *Spirochaeta pallida* from animal to animal is a two-phase reaction. Adaptation to the host means the subjecting of spirochetes to such mechanisms of defense and biochemical reactions as may tend to reduce virulence rather than to increase it in response to locally developed immune substances or metabolic products. From the standpoint of latency, such factors have to be kept in mind, and it is a short step to the belief that spirochetes taken from old or receding lesions would tend to show longer incubation periods when transferred to other animals. This point has been observed irregularly in our study of behavior of strains of *Spirochaeta pallida,* and from the methods employed we are led to believe that inoculations made from lesions of different age are not correlated with prolongation or diminution of the incubation period. Different factors, such as the strain of spirochete and the technic used, may be of more importance. If the vitality of the spirochetes is diminished by residence within a zone of the testicle, the dose of virus used should have some effect on the speed of reaction, yet this is not generally the case, even when other factors are kept relatively constant. To follow up this conception it would be necessary to prove that distinct differences exist between different "lines of descent" obtained from a series of animals which represent transfers from actively developing lesions and a series of generations derived from animals with old, regressive lesions. Each new generation would include, therefore, in series, animals which had been inoculated with *Spirochaeta pallida* taken early and late in the course of infection. Any true variation of the incubation period and other points of interest can be discerned by such a procedure.

EXPERIMENTAL WORK

Organisms Studied.—Seven strains of *Spirochaeta pallida* were used in the experiments to be reported. Of these, three were isolated from the inguinal glands of patients having latent syphilis, two from the semen of similar patients, and two from penile chancres in active cases. The information to be gleaned from any one strain was substantially the same for all, so that two typical examples have been selected for illustration in this paper under the heading of infectivity and survival, while the differences which may appear to exist among *Spirochaeta pallida* from latent sources as compared with the others will be treated separately. These two strains, described as No. 137 and No. 170, have been isolated, respectively, from an inguinal gland of a latent syphilitic patient and from a penile chancre of a patient with an active case. They have been carried in rabbits in this laboratory for over eighteen months.

Animals Used.—Medium sized gray and brown rabbits with well developed testicles were used. As a rule, the animals were from 5 to 6 months old at the time of inoculation.

Technic.—Emulsions of *Spirochaeta pallida* were prepared from material taken directly from the lesion in the testicle by means of a finely drawn out capillary glass pipet. Warm salt solution was added in a small amount to the testicular puncture fluid which was expelled into a sterile Petri dish with the aid of a rubber nipple attached to the pipet. A sterile glass rod, flattened at one end, and bent at a convenient angle, was used to grind up the sticky mass in the smallest possible volume of solution. This was next drawn up into a pipet through a thin layer of sterile absorbent cotton placed in the homogenous emulsion. The perfectly clear fluid containing the organisms free from any tissue or foreign material was then ready for injection. The suspension of spirochetes was prepared so as to average about three for each field. The material was injected in amounts of 0.5 c.c. directly into the center of the testicle by means of glass Luer syringes fitted with a 21 gage needle, ⅝ inch in length.

The rabbits were examined daily after two weeks had elapsed and subinoculations were made at different intervals from the same animal as well as from a single transfer from each rabbit of any series which represented the same new generation in each instance. By means of this method frequently repeated puncture of an individual lesion was avoided and more material for continuous transfer made available from those animals which had to be punctured repeatedly in order to keep the supply of animals at a minimum. Incidentally, the procedure made it possible in some degree to overcome whatever error may prevail in an attempt to exclude the withdrawal of *Spirochaeta pallida* from new minute lesions which may have become localized adjacent to an original old area in the testicle. The shortcomings of technic were appreciated in this connection, and an effort was made to eliminate all possible inaccuracy. Where some degree of metastasis or extension had occurred seemingly, care was taken to avoid any other than the old area which, as a rule, regressed pari passu with the age of the lesion. Results with both methods, carefully followed, revealed no essential differences and checked reasonably accurately.

INCUBATION PERIOD AND SURVIVAL WITHIN THE RABBIT TESTICLE

The persistence of *Spirochaeta pallida* in testicular lesions was marked by considerable variation. This variation did not seem to be associated with differences in the period of incubation, as reference to the correlation tables will show (Tables 1 and 2). Admitting the difficulty of proving the complete absence of organisms by the method of puncture and dark-field examination, a further procedure was resorted to, namely, that of inoculating new animals with emulsions of testicles which were found to be free from spirochetes. Especial effort was made to inject only clear fluid prepared in the manner described. In several instances, testicles which appeared to be normal after varying times subsequent to spontaneous disappearance of lesions, were used in this manner to determine relatively the ultimate period of survival. Excluding this group of animals for the present, the results in general may be summarized thus: *Spirochaeta pallida* could be demonstrated by puncture for periods ranging from one day to four and a half months

or more, irrespective of the period of incubation, which varied as much as seven weeks beyond that of the observed minimum, namely, from 18 to 20 days. No correlation seemed to exist between a short period of incubation and a rapid disappearance of organisms and the reverse (Tables 1 and 2). As far as could be determined, there were no

TABLE 1.—STRAIN 137. CORRELATION-AGE OF LESION, INCUBATION PERIOD, SURVIVAL *

Survival of Spirochaeta Pallida (in Days) in Testicle as Shown by Puncture	Age of Lesion or of Spirochetes in Lesion at Time of Subinoculation						
1- 5	...	000	000	..	..	..	..
	000	+	000	00			+
6-10	0	..	..	..	..	..	..
	++	++					0
11-15	..	0	0	+	..	..	..
			+				
16-20	+	00	..	0	..	..	..
				+			
21-25	..	+	..	..	..	..	..
26-30	..	..	..	..	+	..	..
31-35	..	..	..	..	..	..	..
36-40	..	..	+	..	..	..	..
41-45	..	..	..	..	..	..	..
46-50	..	..	..	0	..	..	..
51-55	..	0	+*	..	..	..	..
56-60	..	..	..	..	..	..	..
61-65	..	..	..	..	..	..	..
66-70	+	0	+	..	..	..	..
76-80	..	..	..	..	..	..	..
90-100	..	..	+*	..	..	..	..
120-130	..	..	..	+*	..	..	..
Incubation period (days)	18-25	26-33	34-41	42-49	50-57	58-65	66-75

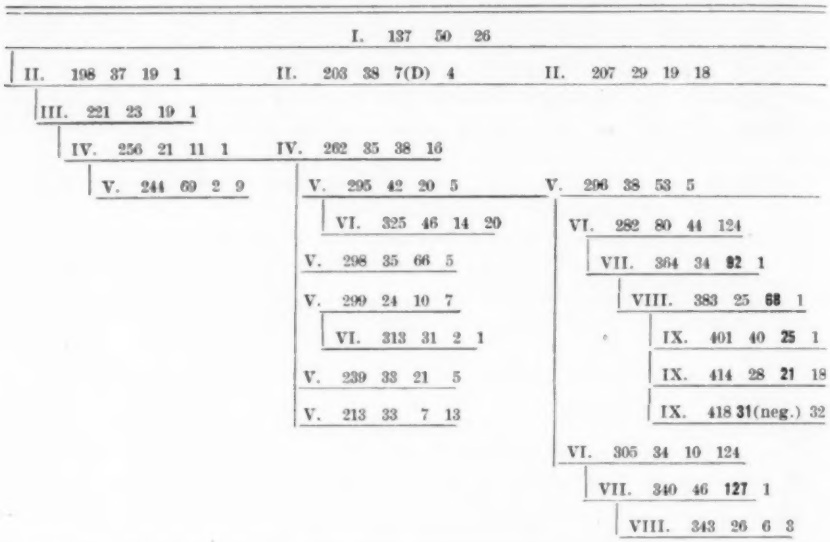
* In Tables 1 and 2 the symbols indicate individual generations of the strain; 0, age of lesion at time of subinoculation; +, survival of Spirochaeta pallida in testicle; *, incomplete observations.

TABLE 2.—STRAIN 170. CORRELATION-AGE OF LESION, INCUBATION PERIOD, SURVIVAL

Survival of Spirochaeta Pallida (in Days) in Testicle as Shown by Puncture	Age of Lesion or of Spirochetes in Lesion at Time of Subinoculation									
1- 5	000	..	0	..	..	..	..	..	..	..
	+	0	+	000			0	0		0
6-10	0	000	0	..	++	..	..	+	..	+
	+	+	++							
11-15	+	..	..	+	..	..	..	..	..	..
16-20	000	..	0	+	0	..	..	..	..	..
	+		++							
21-25	..	0	0	+	0	..	..	..	..	..
26-30	..	..	+	..	..	..	..	..	..	..
31-35	..	..	0	..	..	..	..	..	..	..
36-40	..	+	0	0	..	..	..	..	..	..
41-45	+	..	0	+	..	..	..	..	..	..
60-65	+	+*	..	..	..	..	+	..	..	..
70-75	..	0	+	..	..	..	..	..	..	..
Incubation period (days)	18-21	22-25	26-29	30-33	34-37	38-41	42-45	46-49	50-60	70-75

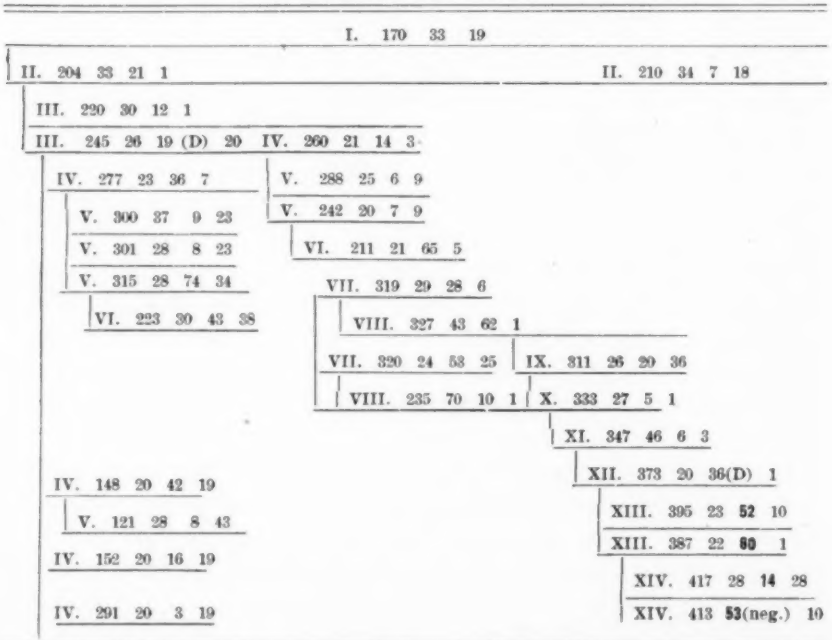
differences to be seen in any series of animals regardless of the number of passages of the strain or the age of the lesion at the time spirochetes were taken for subinoculation. These points are shown graphically in the tables which summarize the data of different "lines of descent" (Tables 3 and 4).

TABLE 3.—Successive Generations of a Strain of Spirochaeta Pallida from a Case of Latent Syphilis *



* In Tables 3 and 4, the Roman numerals represent generations in rabbits' testicles and the figures, reading from left to right indicate, respectively, the number of the rabbits, the incubation period in that animal, the survival of Spirochaeta pallida as found by dark-field examination of puncture material from the testicle, and the age of the lesion or of spirochetes in such lesion at the time subinoculation was made. Figures in bold face type represent incomplete observations. D = death.

TABLE 4.—Successive Generations of a Strain of Spirochaeta Pallida from Chancre in Primary Syphilis



RELATION BETWEEN SPIROCHAETA PALLIDA FROM OLD LESIONS, SURVIVAL IN TESTICLE AND INCUBATION PERIOD

Cyclic changes in testicular lesions have been noted in our series of experiments, and this phase of the study will not be considered here in view of the thorough analysis which has been given in the work of Brown and Pearce.[9] Periodic fluctuations in the spirochetal content of lesions such as they have described seem to be associated regularly with syphilis in rabbits, as our own studies have demonstrated. Whether or not these cyclic changes go hand in hand with other factors is of importance primarily from the standpoint of possible differences in infectivity of organisms taken from lesions at different times when the incubation period and survival under a set of conditions may be compared.

The age of a lesion at the time transfers were made to new series of animals did not affect the period of incubation or the survival of spirochetes within the testicles of succeeding generations of rabbits. It would appear that *Spirochaeta pallida* assumes a condition of latency not devoid of its original infective properties. Furthermore, in several instances in which different amounts of organisms were used for inoculation, no departure from the norm was to be detected. These observations become more significent and more easily interpreted in connection with the protective properties of serums obtained during both the active and latent stages of experimental syphilis, a study which will be reported subsequently.

Spirochaetae pallidae were recovered for variable periods of time up to more than four and a half months when this paper was written. Subinoculations were made at intervals anywhere from one day to more than ten weeks after organisms were first demonstrated in the testicle. In Tables 5 and 6 are given some of the observations which show at a glance that no correlation exists between the age of the lesion or the spirochetal content of such lesions and the survival within the focus of infection. Whether or not the spirochetes which were used for inoculating new series of animals were fresh or old, did not appear to influence adaptation to the testicle as measured by survival, or to affect the period of incubation.

TYPES OF LESIONS

The syphilitic manifestations which were observed in the testicles of rabbits were, with certain exceptions, not constant for any of the strains used in this study. There were variations from a diffuse or interstitial orchitis to a circumscribed induration with all possible gradations

9. Brown, W. H., and Pearce, L.: J. Exper. Med. **31**:709 (June) 1920.

between. Within any series these differences could be observed. In one generation from a chancre strain, for example, a diffuse swelling would occur, only to be followed by a nodular type of lesion, or the reverse might be true. Compact infiltration was followed invariably by regression in which small nodules became palpable and subsequently disappeared. At other times a definite cycle was manifested. In these instances induration would be followed by the development of circumscribed areas a week or more after marked regression had become apparent. Thus the persistence of *Spirochaeta pallida* in the puncture material obtained from testicles did not bear any relation to the type of lesion and its cycle, other than a longer period of survival such as would naturally be the case in a chronic or proliferative type of lesion which seemed to be associated invariably with the strains of *Spirochaeta pallida* isolated from glands of patients with latent syphilis. Barring this outstanding difference in behavior, nothing unusual was noted in the remaining strains.

TABLE 5.—Strain 137. Survival of Spirochaeta Pallida in Testicle*

Age of Lesion (Days) at Time of Subinoculation															
70-75	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
26-30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21-25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16-20	..	+	+	..	..	..	..	+*	..	..	..	..	..	..	..
11-15	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
6-10	+	+	..	..	..	..	..	..	..	..	+	..	..	..	..
1-5	..	+	..	++	..	..	..	..	..	..	..	..	..	..	..
	+	+(d)	..	++	+*	..	..	..	+	..	+*	+	+*	+	+*
Days	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	51-55	56-60	61-65	66-70	91-95	96-100	120-130

* In Tables 5 and 6 + indicates individual observations, * incomplete observations, and (d), died.

TABLE 6.—Strain 170. Survival of Spirochaeta Pallida in Testicle

Age of Lesion (Days) at Time of Subinoculation															
46-50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
41-45	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
36-40	..	..	..	+	..	..	..	..	+	..	..	..	..	..	..
31-35	..	..	..	..	..	..	..	..	..	..	.	..	..	..	+
26-30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21-25	..	++	..	..	..	..	..	..	..	..	+	..	..	..	..
16-20	+	+	..	++	..	..	..	..	+	..	..	..	..	..	..
11-15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6-10	..	++	..	..	..	+	..	+	..	..	..	..	..	..	..
1-5	+	+	++	..	+	..	..	+(d)	..	..	..	..	++	+	..
Days	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75

Lesions resembling chancres in certain respects occurred in six instances—in three strains isolated from primary chancres and three times with a strain of spirochetes isolated from a latent source. This strain was of special interest from the standpoint of spontaneous

inoculation of the opposite testicle in the course of the infection. The development of scrotal chancres was observed on three occasions following intratesticular inoculation of the opposite testicle. One rabbit which had been inoculated with a strain in the seventh generation gave a positive reaction after an incubation period of thirty-four days. The lesion was confined to the upper pole of the left testicle and was

Figure 1

Figure 2

Figure 3

Scrotal infections in the course of active processes in opposite testicles.

nodular in type. Six weeks later a chancre, 1.5 by 3 cm., developed on the scrotum of the right testicle. Two weeks later, the originally infected testicle presented a chancre-like lesion immediately adjacent to the primary lesion (Fig. 1). The second example of this nature occurred in an animal which had been inoculated similarly with the strain of a like generation from another series. The original lesion in the left testicle first appeared as a circumscribed nodule nineteen days

after inoculation, and forty days later the right testis showed a scrotal chancre measuring 1 by 3 cm. (Fig. 2). A third instance of chancrous lesions with this strain occurred in the eighth generation which represented a subinoculation from the preceding animal just mentioned. A nodular lesion, developing after an incubation period of twenty-five days, was followed thirty-one days later by a scrotal chancre at the original site of infection. Ten days later a similar scrotal lesion occurred at the lower pole of the testicle. The fourth example of autoinoculation occurred in the fourteenth generation of a chancre strain. A nodular lesion developed at the upper pole of the left testicle twenty-three days after inoculation. Eight weeks later a scrotal chancre, 1 by 1.5 cm., was noted at the lower pole of the same testicle and on the right a chancre 1 by 2 cm. with an indurated border about 4 mm. in thickness (Fig. 3). The remaining two examples of this nature may be dismissed briefly with the observation that it is possible for a scrotal lesion to develop soon after the appearance of a lesion within the testicle, in fact, in one instance a primary manifestation appeared after twenty-eight days' incubation.

REINOCULATION EXPERIMENTS AND THE POSSIBLE INFLUENCE OF SENSITIZATION

The autoinoculations which have been mentioned and the well-known phenomenon of scrotal lesions occurring subsequent to intratesticular injection of *Spirochaeta pallida* are suggestive of the possible importance which might be attributed to the sensitization of certain tissues in the animal body during active infection with syphilis. Our knowledge of the mechanism by which syphilitic gummas are developed is indicative of a sensitizing process in which spirochetal cell-products or toxins play a part. In the rabbit testicle the purely local immunity of an infectious process is sharply defined by the manner in which new crops of lesions appear adjacent to involved areas. Chancre-like lesions, such as have been described in this paper and in the work of Brown and Pearce, seem to conform to a picture of necrosis and sloughing and, in general, to possess the characteristics of a true secondary manifestation. In a more striking way the involvement of the scrotum adjacent to testicular foci lends itself to a similar interpretation. Although this phase of the study could not be entered into with the degree of completeness desired, a small series of experiments gave results sufficiently uniform to merit some discussion. Attempts to infect the opposite testicle in the course of active involvement, during the stages of marked regression, and after almost complete disappearance of palpable lesions in one testicle, resulted in the development of chancre-like lesions in the other, without giving rise at any time to the

characteristic process following intratesticular inoculation. A series of eight rabbits was injected in the normal testicle with material taken at different times from their respective infected testicles. Another series included animals that received homologous *Spirochaeta pallida* taken from other rabbits. The strain used was isolated from the inguinal gland of a case of latent syphilis. In the first group, 50 per cent. of the animals developed lesions in the subsequently inoculated testicle and in the second group, 75 per cent. The incubation period averaged from five to five and a half weeks. Dark-field examinations were characterized uniformly by a relative paucity of organisms. The scrotal lesions disappeared in from ten days to three weeks. Whether or not similar results may be obtained by the use of heterologous strains of spirochetes in an analogous manner is not known, since the object of the experiments was to determine roughly the infectivity of *Spirochaeta pallida* with a set of conditions tending to throw light on certain immune reactions. The outstanding feature of the experiments seems to be that the elaboration of syphilitic antibodies is not at its height early in the course of infection. This idea is borne out by studies on the protective properties of serum obtained from active and latent syphilis.

SURVIVAL OF SPIROCHAETA PALLIDA IN COMPLETELY HEALED TESTICLES OF RABBITS

Variations from the usual type of testicular infection in rabbits occur frequently. In some animals, at irregular times, slight changes may be found after inoculation with material from an actively infectious testicle, and again there are numerous instances of apparent failure to produce a "take." Influences which may modify the results of transfer from animal to animal have been discussed already, and attention will be given now to examples of "latent" *Spirochaeta pallida* in testicles which have proved continually negative by puncture for long periods, coincident with total disappearance of lesions, and in testicles which have remained negative for indefinite periods without having shown lesions or spirochetes at any time. In four instances we have succeeded in isolating *Spirochaeta pallida* from suspensions prepared with macerated testicles of rabbits which had been found negative by puncture and free from visible or palpable lesions for a period of from four to five months; twice in rabbits carrying a strain of spirochetes isolated from an inguinal gland of a patient with latent syphilis (Strain 137), once from a rabbit with a strain isolated from the semen of a latent syphilitic patient (Strain 117), and again from an animal which had been inoculated with spirochetes from a penile chancre.

SPIROCHAETA PALLIDA IN TESTICLES NEGATIVE BY PUNCTURE AND FREE FROM LESIONS

That certain conditions as they exist in the experimental animal may be paralleled in patients and deductions drawn accordingly would follow from the observations made in cases of latent syphilis [1] and in some of the present work. The tendency for *Spirochaeta pallida* to assume a dormant or latent state in the body is now an established fact. A brief consideration of the behavior of a single strain of organisms which has been studied intensively in our work may add more data from the immunologic standpoint. A group of rabbits representing the sixth generation of "latent strain 137" was characterized by progressively diminishing lesions and a pronounced tendency toward a negative picture in the testicle, irrespective of the character as to age and amount of material taken for subinoculation from the previous generations. Four animals which had been inoculated with spirochete-containing material from a rabbit in the sixth generation series failed to develop any lesions and were found negative by puncture for more than four months. A rabbit from this group was castrated and an emulsion of the inoculated testicle injected into the testicle of another rabbit which remained negative for a period of six weeks. This animal was castrated and the testicular emulsion injected into a third rabbit which developed a minute nodule after five weeks. The lesion, about 2 mm. in diameter, did not increase in size and was found to contain spirochetes over a period of two weeks when the lesion disappeared.

TABLE 7.—SUMMARY OF PROTOCOLS

Strain	Old Series Incubation Period Days	Survival of Spirochetes Days	Days Negative	Subinoculations Incubation Period Days
137	28	22	116	34
137	35	66	138	48
117	28	31	116	42
169	30	29	120	41

CONCLUSIONS AND SUMMARY

The infectivity of *Spirochaeta pallida* derived from old lesions was not diminished by prolonged residence in an infected focus. No correlation seemed to exist between the period of incubation of the organism, on one hand, and the age of the lesion from which it was obtained, on the other.

Survival of *Spirochaeta pallida* in experimental syphilis was subject to marked variation. The persistence of spirochetes in rabbits' testicles was not correlated with the period of incubation, with the age

of the lesion, or with the number of animal passages of the different strains studied. Incomplete observations show that they may be present for more than five months.

Spirochetal content of lesions in the testicle was not correlated with the age of lesions and survival within the focus of infection. Fresh as well as old spirochetes did not appear to influence adaptation to environment as measured by survival, or to affect the period of incubation. No differences have been found to exist between different "lines of descent" made from a series of animals which represented transfers from actively developing lesions, and a series of generations which were derived from animals having old regressive lesions.

Although syphilitic manifestations in the rabbit testicle may exhibit a wide range of variability in their cyclic changes, certain outstanding features may be associated with definite strains of *Spirochaeta pallida*. A chronic proliferative type of reaction characterized organisms which had been isolated originally from cases of latent syphilis. The type of lesion, however, did not give an indication as to the fate of *Spirochaeta pallida* in such lesions. Scrotal lesions following as late manifestations of old testicular infection were not referable to particular strains.

Elaboration of syphilitic antibodies appeared to be at a maximum late in the course of infection and predisposed to a condition of latency in which, despite the absence of lesions, *Spirochaeta pallida* could be demonstrated. Far from preventing reinoculation with *Spirochaeta pallida*, a state of resistance appears to favor the localization of organisms in tissues without giving rise to manifest lesions.

Inoculated testicles which remained negative for indefinite periods, presenting no lesions, and proving negative by puncture, have been found to harbor *Spirochaeta pallida* capable of infecting other animals. The tendency for a condition of latency to occur was confined to certain strains of organisms, in particular those which had been isolated from latent sources in patients and rabbits.

In the absence of lesions and with negative dark-field findings over a period of four to five months, *Spirochaeta pallida* was isolated from apparently normal testicles which had previously been positive for spirochetes.

Sensitization phenomena may play an important part in the production of a certain kind of scrotal lesion resulting from autoinoculation of a normal testicle, from experimental infection of the opposite testicle in the course of involvement of the other, or from old testicular foci.

Seven strains of *Spirochaeta pallida* have been studied from the standpoints of infectivity and survival and differential characters. Five of the strains were isolated from cases of latent syphilis—inguinal glands and semen—and the others were obtained from penile chancres.

IS LUPUS ERYTHEMATOSUS DISCOIDES CHRONICUS DUE TO TUBERCULOSIS?

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The question of the relationship of lupus erythematosus to tuberculosis has interested dermatologists since the time of Cazenave, who gave the disease its present name, and considered it probably identical with lupus vulgaris. Very early most French observers, on the strength of their clinical observations, maintained that lupus erythematosus was of tuberculous origin, a paratuberculosis. Dermatologists of the English, Austrian and German schools, on the other hand, insisted that evidence favoring such a view was insufficient. Since that time opinions have varied. Recently certain American authorities [1] have expressed doubt as to the specific tuberculous origin of this dermatosis, and seem to favor multiple etiologic factors. Their conception, evidently based on a varied clinical experience, is in accord with my own. To verify my clinical impression I made this statistical study, approaching the question by four avenues:

1. The percentage of clinical tuberculosis detected in patients with lupus erythematosus discoides chronicus, who had been adequately studied for tuberculosis, was estimated.

2. The records were searched for patients with dermatoses ordinarily not associated with tuberculosis in order to determine, for comparative purposes, the frequency of clinical tuberculosis in these dermatoses. No record was used which did not show evidence of an adequate examination for tuberculosis.

3. The frequency of clinical tuberculosis in such dermatoses as erythema multiforme and erythema nodosum, probably in certain cases of tuberculous origin, was compared with the incidence of tuberculosis in lupus erythematosus discoides chronicus.

4. The incidence of tuberculosis shown by the records of patients with tuberculids, who had been adequately examined for tuberculosis, was compared with the frequency of tuberculosis in patients with lupus erythematosus discoides chronicus. It should be stated here that "patients adequately examined for tuberculosis" means patients who

1. Hartzell, M. B.: Lupus Erythematosus and Focal Infection, Arch. Dermat. & Syph. **2**:441 (Oct.) 1920.

had been subjected to special examination for the detection of the disease in the medical sections and not merely to routine physical examination.

CLINICAL TUBERCULOSIS IN PATIENTS WITH LUPUS ERYTHEMATOSUS DISCOIDES CHRONICUS

Fifty-six patients in a group of 150 with lupus erythematosus discoides chronicus had been specially examined for tuberculosis. The records of the others were unsatisfactory for the purpose, either because the diagnosis of lupus erythematosus discoides chronicus had not been definitely made, or because the physical examination for tuberculosis was not adequate. Twenty (35.7 per cent.) of the fifty-six patients had tuberculosis, of whom eight (40 per cent.) had glandular involvement alone, and five (25 per cent.) had both glandular and other forms of tuberculosis. Seven of these patients (35 per cent.) showed signs of tuberculosis other than glandular. Four of these were reported as probably cured. It should be observed that 65 per cent. of the tuberculous lesions found in these patients were of the glandular type. Incidentally, it was noted in our group that the average age of the patient at the onset of lupus erythematosus discoides chronicus was 33 years. The youngest patient was 7 years when the disease began, and the oldest 59 years. These facts evidently do not constitute evidence for or against tuberculosis as an etiologic agent. Realizing the various difficulties that beset the examiner in obtaining a reliable family history of tuberculosis from the average layman, I do not wish to emphasize the significance of any data obtained from the histories alone; it may be stated, that our records gave a positive family history of tuberculosis in fifteen instances (27 per cent.) only. Four of these were in patients with definite tuberculosis infection at the time of examination.

FREQUENCY OF CLINICAL TUBERCULOSIS IN VARIOUS DERMATOSES

To find the frequency of clinically recognizable tuberculosis in dermatoses admittedly not of tuberculous origin, fifty-six records of patients with miscellaneous nontuberculous dermatoses, in whom an adequate examination for tuberculosis had been made, were taken at random from 252 successive histories searched to yield the required number. The only basis for selection was a special examination for tuberculosis. Included in the 252 cases were thirty-three cases of dermatitis herpetiformis, thirty-six of lichen planus, 145 of eczematoid dermatitis and thirty-eight of psoriasis. The total number of histories examined, the number of patients adequately examined for tuberculosis, and the proportion of positive findings of tuberculosis are given in the following table.

INCIDENCE OF TUBERCULOSIS IN MISCELLANEOUS DERMATOSES

Type of Dermatosis	Patients	Patients Adequately Examined	Tuberculosis Present
Dermatitis herpetiformis.....	33	7	2 (28.5 per cent.)
Lichen planus.....	36	9	1 (11.1 per cent.)
Eczematoid dermatitis.....	145	29	11 (38 per cent.)
Psoriasis	38	11	4 (36.4 per cent.)
Total	252	56	18 (32.1 per cent.)

The table shows that the percentage of clinical tuberculosis in miscellaneous dermatoses is almost as high as the incidence of tuberculosis in lupus erythematosus discoides chronicus (32.1 per cent. compared with 35.7 per cent.). It should be noted, however, that there was only one case with glandular tuberculosis in this group.

FREQUENCY OF CLINICAL TUBERCULOSIS IN ERYTHEMA MULTIFORME AND ERYTHEMA NODOSUM

The incidence of tuberculosis in such dermatoses as erythema multiforme and erythema nodosum was next considered. This examination is of unusual interest because erythema multiforme and erythema nodosum are probably etiologically as closely allied to lupus erythematosus discoides chronicus as any dermatoses, in the sense that their cause is undetermined, but that much evidence points to a tuberculous factor in their etiology [2] in some instances, and their nontuberculous [3] nature in others. The belief is gaining ground that other influences, for example, focal infections, may uncover the tuberculous lesion, so to speak, much as measles is known to uncover it and permit a lighting up of a lesion otherwise quiescent.[4] Fifty-three patients with erythema multiforme and erythema nodosum in a group of ninety-six had been adequately examined for tuberculosis. Of these, seventeen (32 per cent.) had evidence of tuberculosis. Two facts are evident. The incidence of clinical tuberculosis in these dermatoses is slightly less (32 per cent.) than that in such admittedly nontuberculous dermatoses as those classified under the term eczematoid dermatitis (37.9 per cent.). Neither does the percentage exceed that in all the nontuberculous dermatoses considered (32.1 per cent.). It also compares favorably with the incidence of tuberculosis in lupus erythematosus discoides chronicus

2. Foerster, O. H.: The Association of Erythema Nodosum and Tuberculosis, J. A. M. A. **63**:1266-1268 (Oct. 10) 1914.

3. Rosenow, E. C.: The Etiology and Experimental Production of Erythema Nodosum, J. Infect. Dis. **16**:367-384, 1915.

4. Stokes, J. H.: Clinical Studies in Cutaneous Aspects of Tuberculosis. I. "Tuberculous" Purpura, Erythema Multiforme and Erythema Nodosum, Am. J. M. Sc. **157**:157-170, 1919.

(35.7 per cent.). These figures, while too small to be conclusive, suggest that erythema multiforme and erythema nodosum, like lupus erythematosus discoides chronicus may both at times be of tuberculous etiology, but that they may both at times be of nontuberculous etiology.

INCIDENCE OF CLINICAL TUBERCULOSIS IN THE TUBERCULIDS COMPARED WITH ITS INCIDENCE IN LUPUS ERYTHEMATOSUS DISCOIDES CHRONICUS

The most striking feature of this study was the contrast afforded by the incidence of clinical tuberculosis in the tuberculids when compared with its incidence in lupus erythematosus discoides chronicus. Thirty-seven cases of lichen scrofulosorum, erythema induratum, papulonecrotic tuberculids, folliclis and acnitis (Barthélemy) had been adequately examined for tuberculosis. Of these, thirty-one (84 per cent.) presented definite clinical evidence of infection compared with 35.7 per cent. in lupus erythematosus discoides chronicus. The tuberculosis in eighteen (48.6 per cent.) was of the glandular type only, and in four (10.8 per cent.) both of glandular and of some other type. Six of the patients who presented negative findings had erythema induratum. The diagnosis of one of the six is still to be regarded as doubtful after prolonged observation. In none of the foregoing cases did we find an authentic instance of the simultaneous occurrence of lupus erythematosus discoides chronicus and tuberculids.[5]

The unimportant part played by tuberculosis in lupus erythematosus discoides chronicus, as compared with acknowledged tuberculids, is so striking that one is tempted to say flatly that lupus erythematosus discoides chronicus cannot have the pathogenesis of a tuberculid in the accepted sense of the term.

TUBERCULOSIS AS AN ETIOLOGIC AGENT

A review of the literature illustrates the difficulty of adding anything new to the evidence incriminating tuberculosis as an etiologic agent in lupus erythematosus discoides chronicus. It does not seem necessary to review here in detail the various arguments based on clinical observation. This has been done most thoroughly by Friedlander,[6] Fresh-

5. Among the earlier records of the department I subsequently found one instance of such association, and such association has been reported by MacLeod, Wile and others. MacLeod, J. M. H.: A Case of Erythema Induratum, Brit. J. Dermat. **18**:406, 1906. Wile, U. J.: Widespread Lupus Erythematosus with Associated Papulo-Necrotic Tuberculide (?), J. Cutan. Dis. **29**: 286-290, 1911.

6. Friedlander, D.: The Etiology of Lupus Erythematosus with Especial Reference to Tuberculosis and a Report of Thirteen Cases Tested by the Moro Reaction, J. Cutan. Dis. **29**:417-428, 1911.

water,[7] Bloch and Fuchs,[8] Wise [9] and others. Most of the arguments are based on evidence aiming to prove the tuberculous nature of lupus erythematosus discoides chronicus by its frequent association with other evidence of tuberculosis. The double edged character of such arguments becomes apparent when such observers as Gunsett [10] and Weiss and Singer [11] come to the conclusion that tuberculosis is not a factor in the production of lupus erythematosus discoides chronicus, on diametrically contrary observations. Gunsett collected from the literature twenty cases of lupus erythematosus in which careful postmortem examinations had been made. In only nine of these was any evidence of tuberculosis found. Ten of the postmortem examinations were made under the direction of Rokitansky, and in seven instances no evidence of tuberculosis was discovered. Gunsett is well aware of the frequency of tuberculosis in general and justly lays special emphasis on the frequent impossibility of demonstrating on postmortem examination the presence of tuberculosis in lupus erythematosus discoides chronicus. In the light of our present knowledge it certainly seems that a carefully conducted postmortem examination is worth vastly more than all the combined clinical statistics endeavoring to show the coincidence of tuberculosis and lupus erythematosus discoides chronicus.

To Weiss and Singer the association of tuberculosis with lupus erythematosus discoides chronicus means chiefly the ubiquity of tuberculosis and is not evidence of any etiologic relationship. They found indubitable evidence of tuberculosis past or present in ten of their twelve patients, and they believe that the other two were also tuberculous. They emphasize the fact that investigators have found increasingly higher percentages of tuberculosis in their postmortem examinations, and they cite Opie [12] as being able to demonstrate tuberculous lesions in every one of fifty patients who died of nontuberculous diseases. This pathologist used a most ingenious method of postmortem investigation. Roentgen-ray pictures were taken of the inflated and extirpated lung followed by minute section and search with the skiagram as a guide. These observations suggest that tuberculosis is

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7. Freshwater, D.: The Etiology of Lupus Erythematosus, Brit. J. Dermat. **24**:57-69, 99-115, 1912.

8. Bloch, B., and Fuchs, H.: Ueber die Beziehungen des chronischen Lupus erythematodes zur Tuberkulose. Arch. f. Dermat. u. Syph. **116**:742-803, 1913.

9. Wise, F.: The Relation Between Lupus Erythematosus and Tuberculosis, New York M. J. **107**:1164-1167, 1918.

10. Gunsett, A.: Ist der Lupus erythematodes ein Tuberkulid? München. med. Wchnschr. **50**:378-381, 1903.

11. Weiss, R. S., and Singer, J. J.: The Relation of Lupus Erythematosus Discoides to Tuberculous Infection, Am. J. M. Sc. **155**:528-540, 1918.

12. Opie, E. L.: Quoted by Weiss and Singer.

almost universal. Since lupus erythematosus discoides chronicus is a comparatively rare disease, these observations certainly suggest that factors of moment other than tuberculosis must enter into the etiology of the disease. The results of the present study support Weiss' and Singer's view not only because in nontuberculous dermatoses approximately as high an incidence of clinical tuberculosis as in lupus erythematosus discoides chronicus was apparent, but also because in lesions of the skin admittedly tuberculous, such as the tuberculids, the incidence of clinical tuberculosis is far higher. Weiss and Singer's tabulations of lupus erythematosus discoides chronicus cases correspond closely with my data. They found a total of 225 cases, in sixty-four of which the presence or absence of tuberculosis was noted. Of these sixty-four cases, eighteen (28 per cent.) showed evidence of tuberculosis and forty-six (72 per cent.) did not. Our combined observations seem to indicate that clinically recognizable tuberculosis is a factor in only a moderate percentage of cases of lupus erythematosus discoides chronicus. While clinical observation thus critically examined seems to give little encouragement to a belief in the tuberculous etiology of lupus erythematosus discoides chronicus, experimental investigation at times seems all but to have proved its tuberculous origin. When the results of these investigations are critically reviewed, however, the case for a purely tuberculous etiology does not seem nearly so strong.

Tuberculosis Demonstrated by Tuberculin Test.—It is, of course, not surprising that in cases of lupus erythematosus discoides chronicus, as in other diseases suspected of a tuberculous etiology, the tuberculin test should have been freely employed. It is at once apparent that only the focal reaction in the lupus erythematosus discoides chronicus lesion could possibly be of any significance. The von Pirquet, the intradermal and the general reactions are only of interest in so far as they signify tuberculous infection past or present. But as in a certain number of patients with lupus erythematosus discoides chronicus the systemic tuberculous infection is easily demonstrated clinically, and as tuberculosis is probably present in the majority of the remainder, as modern investigation tends to show, the tuberculin reaction is of little value. Fishberg [13] found that between 40 and 60 per cent. of humanity react to the tuberculin test. Franz [14] was able to obtain from 60 to 70 per cent. of positive tuberculin reactions in several Austrian regiments. It must be remembered that he was dealing with healthy men selected

13. Fishberg, M.: Quoted by Weiss and Singer.
14. Franz: Quoted by Deycke, p. 22.

because of exceptional physical fitness. Deycke [15] states that in European countries it is only the exceptional adult who does not react to tuberculin. It would hardly seem that the systemic tuberculin reaction can be adduced as an argument to prove the tuberculous etiology of lupus erythematosus discoides chronicus.

The focal or local reaction in the lupus erythematosus discoides chronicus lesion has been looked on as favoring the tuberculous origin of lupus erythematosus, and such a phenomenon has been reported by some good observers. Engman and McGarry [16] have repeatedly observed this reaction, however, on the injection of dead typhoid bacilli used as a foreign protein. Barber [17] has observed a severe focal reaction following the injection of an autogenous vaccine prepared from a tonsillar swab which gave a pure growth of long-chain streptococci. Moreover, true cutaneous tuberculosis (lupus vulgaris) is known to give focal reactions to nonspecific agents, such as arsphenamin.[18] It seems, therefore, that the focal phenomenon can be produced readily by other agents.

The fact that lupus erythematosus improves under the administration of tuberculin cannot be regarded as a valid argument for its tuberculous nature. Engman and McGarry, Barber, and Adamson,[19] have seen patients definitely improve under the administration of other forms of internal medication. We have observed the disappearance of lupus erythematosus under a species of autogenous vaccination produced by an attack of erysipelas.[20]

Demonstration of Tubercle Bacillus by Ziehl's and Much's Methods.—The demonstration of the tuberculosis bacillus directly by Ziehl's method in the sections from patches of lupus erythematosus has been frequently tried but never successfully accomplished. When the difficulty of demonstrating the bacillus by this method from the lesions of a known tuberculous nature, such as lupus vulgaris, is considered, it is not surprising that lupus erythematosus yields negative results. In recent years Much's method has enabled observers apparently to demonstrate

15. Deycke, G.: Praktisches Lehrbuch der Tuberkulose, Berlin, Springer, 1920, p. 23.

16. Engman, M. F., and McGarry, R. A.: The Treatment of Certain Diseases of the Skin by the Intravenous Injection of a Foreign Protein, J. A. M. A. **67**:1741-1745, 1916.

17. Barber, H. W.: A Case of Lupus Erythematosus Associated with Streptococcal Infection of the Tonsils, Brit. J. Dermat. **31**:186-193, 1919.

18. Herxheimer, K., and Altmann, K.: Ueber eine Reaktion tuberkulöser Prozesse nach Salvarsaninjektion, Deutsch. med. Wchnschr. **37**:441-443, 1911.

19. Adamson, H. G.: Discussion of Lupus Erythematosus, Proc. Roy. Soc. Med., Sect. Dermat. **13**:98, 1920.

20. Stokes, J. H.: Discussion of Lupus Erythematosus, Arch. Dermat. & Syph. **2**:445-446, 1920.

tuberculosis bacilli when it was impossible to find them by Ziehl's stain. The presence of Much's granules is not generally accepted, however, as proof of the tuberculous nature of any lesion. Their identity with tuberculosis bacilli is not universally accepted, and it is an acknowledged fact that it is often difficult to distinguish between Much's granules and artefacts in sections or smears.[15] Positive demonstrations of tuberculosis bacilli are reported in only a few instances. The organisms were all found in excised pieces of tissue from lupus erythematosus treated by the antiformin method. Such cases have been reported by Arndt,[21] Hidaka,[22] Spiethoff,[23] and Friedlander.[24] These observers demonstrated the bacilli by both Ziehl's and Much's methods. Hidaka and Friedlander, however, are skeptical of their significance. The former does not consider Much's granules as proof of tuberculosis. He believes that tuberculosis bacilli may easily circulate in the blood of tuberculous persons, or that they may be simulated by acid-fast bacilli found in the water supply and accidentally introduced during the experiment. These positive findings need further confirmation before they can be accepted as having any significance. It should be said also that Arndt's cases were not of the chronic type. Granted that his observations were correct for the type of case he examined, it would not be proof that the chronic type did not involve some special factors of etiologic moment.

Tuberculosis Proved by Animal Inoculation.—Undoubtedly, the experiments of greatest significance are those in which positive animal inoculations have been obtained. A positive result is probably the most dependable proof obtainable, although errors may readily be committed here also. I was able to find in the literature records of only seven positive animal experiments, and these merit most careful scrutiny.

Gougerot [25] reported the first successful attempt at animal inoculation. His first patient had a typical lupus erythematosus of the scalp without other evidence of tuberculosis. The patch was excised and transplanted into two guinea-pigs. Five months after inoculation one animal did not reveal evidence of tuberculosis on section; the other had

21. Arndt, G.: Ueber den Nachweis von Tuberkelbacillen bei Lupus erythematodes acutus resp. subacutus, Berl. klin. Wchnschr. **47**:1360-1362, 1910.

22. Hidaka, S.: Ueber den Nachweis von Tuberkelbazillen und Muchschen Granula bei Lupus vulgaris, Lupus erythematodes, Erythema induratum Bazin, Lupus pernio und papulo-nekrotschem Tuberkulid, Arch. f. Dermat. u. Syph. **106**:259-276, 1911.

23. Spiethoff, B.: Zur Aetiologie und Pathologie des Lupus erythematodes chron. und Acut, Arch. f. Dermat. u. Syph. **113**:1047-1060, 1912.

24. Friedlander, D.: The Value of Much's Granules and the Antiformin Method in Determining the Etiology of the So-Called Tuberculides, with Especial Reference to Lupus Erythematosus, Brit. J. Dermat. **24**:13-20, 1912.

25. Gougerot, H.: Tuberculoses cutanées atypiques non folliculaires, Rev. de la tuberculose **5**:345, 1908.

two sclerotic matted glands with caseated centers at the site of the graft. In the caseous material a few tuberculosis bacilli were found. The liver and spleen also revealed a few small nodules with typical tuberculous structure. This case is probably the nearest approach to an experimental demonstration reported in the literature. It was evidently a typical case of lupus erythematosus discoides chronicus in a patient without other evidence of tuberculosis. The experimental evidence produced from cases with acute disseminate lupus erythematosus or from cases of an atypical type cannot be accepted as demonstrating a tuberculous etiology for lupus erythematosus discoides chronicus.

The second case reported by Gougerot is a freak or atypical lupus erythematosus. The case does not apparently belong even in the usually recognized subclasses of lupus erythematosus, but perhaps may be regarded as an example of a vesico-ulcerative type. When authorities hold widely divergent opinions relative to the etiology and nosology of such conditions as the various types of sarcoids, nodular tuberculosis of the hypoderm, granuloma annulare, erythema elevatum diutinum and allied dermatoses, certainly no atypical case of lupus erythematosus which may at times resemble any of these dermatoses should be used to prove the etiology of lupus erythematosus discoides chronicus. We must therefore conclude that Gougerot's second case cannot be accepted as an authentic lupus erythematosus discoides chronicus.

Ehrmann and Reines [26] reported a case of successful animal inoculation. In their patient the lupus erythematosus discoides chronicus was, however, associated with typical papulonecrotic tuberculids on the buttocks and large tuberculous glands of the neck. The significance of a positive animal inoculation from such a case remains open to discussion. The criticism of the experiment revolves largely around the presence of active tuberculous lesions in the body. In this particular instance the presence of a tuberculid speaks for hematogenous distribution of tuberculosis bacilli. The hematogenous distribution of tuberculosis bacilli may at least be regarded as fairly well supported, for example, by the observations of Liebermeister,[27] who believed himself able to demonstrate the tuberculosis bacilli in the blood of living patients. He not only found them in advanced stages or when the patient was moribund, but also in a number of clinically mild cases. On the basis of his experimental and pathologic observations, he concludes that tuberculosis bacilli are in every case periodically projected

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26. Ehrman, S., and Reines, S.: Zur Frage des Lupus erythematodes und der Tuberkulide überhaupt, Med. Klin. **4**:1298-1302, 1908.

27. Liebermeister, G.: Studien über Komplikationen der Lungentuberculose und über die Verbreitung der Tuberkelbazillen in den Organen und im Blut der Phthisiker, Virchows Arch. f. path. Anat. **197**:332-425, 1909.

into the blood and that they may circulate in the blood without producing a miliary tuberculosis or typical metastasis. It is an accepted fact that tuberculosis of the kidney, in the vast majority of instances, is of hematogenous origin. O'Neil [28] says, "There is ample evidence to show that the bacilli are carried to the kidney by the arterial blood in a great majority of cases. Blood infections in tuberculous patients are not uncommon, and it is a well established fact that even with a small tuberculous focus in an active state, such as an apical lesion, there may be a temporary bacillemia during which time the bacilli may be recovered from the blood. Further evidence that tubercle bacilli reach the kidney more or less constantly is shown by numerous observations that in pulmonary tuberculosis a filtration of bacteria may take place through the kidneys which after death show no evidence of tuberculous disease." Presence of tuberculosis bacilli in the circulating blood should warn us not to lay too much stress on the presence of these bacilli in excised pieces of tissue. The demonstrated bacilli could in certain instances have been present in the capillaries of the lesion. This presence of bacilli in the capillaries could easily occur in early lesions of lupus erythematosus discoides chronicus with their marked vascular dilatation and blood stasis.

Probably no experimental work on the tuberculous nature of lupus erythematosus discoides chronicus has been more carefully controlled than that of Bloch and Fuchs.[8] These authors review carefully all the evidence brought forward for or against the tuberculous etiology of the condition. They conclude that unless it is the results of positive animal inoculation, none of the evidence brought forward in behalf of tuberculous etiology is so strong that other evidence equally valid cannot be found to offset it. Believing that positive animal inoculations would be the only conclusive proof, these observers made determined efforts to produce tuberculosis in guinea-pigs by inoculating them with pieces of the tissue from lupus erythematosus. They were able to demonstrate tuberculosis bacilli in four cases. In two instances in the first series of animals the inoculation was successful, once in the second series, and once not until the third series. The authors believe that their success was due to repeated animal passage; the gradually increasing virulency of the bacillus finally produced tuberculous lesions in the experimental animal. Here again the value of the experiments is impaired by the fact that three of the patients had active tuberculosis. One of the patients had an active disseminate lupus erythematosus which closely resembled the type first described by Kaposi as erysipelas faciei perstans. This case must be eliminated because of the doubtful nosologic classi-

28. O'Neil, R. F.: Tuberculosis of the Kidney and Ureter, in Cabot, H.: Modern Urology, Philadelphia, Lea & Febiger **2**:496, 1918.

fication of the dermatosis. The fourth case, while not clinically tuberculous, reacted severely to 1 mg. original tuberculin. In all of these cases the possibility that the patient's blood contained circulating tuberculosis bacilli and that, as Liebermeister suggests, these might have lodged in the capillaries, must be considered. Certainly it would seem that much better material to prove the purely tuberculous etiology of lupus erythematosus discoides chronicus could have been chosen. To prove that lupus erythematosus discoides chronicus is a true tuberculosis, typical cases of lupus erythematosus discoides chronicus without other clinical manifestations of tuberculosis should be selected. There is an abundance of such material, as the cases reported in the English and American literature and those in this series readily attest. It may be that such experiments have been made and proved uniformly negative, and therefore have not been reported. To date the only case of positive animal inoculation that will endure a critical review is the first case reported by Gougerot. Even here accidental retention of bacilli in the morbid process is not eliminated. This case, however, is only a single instance and needs confirmation before it can be accepted at its face value.

Cutaneous Allergic Phenomena.—In a consideration of reactions of the skin many suggestive points bearing on a possible nonspecific character in the tuberculin reaction in lupus erythematosus discoides chronicus may be found. The allergic reaction of the skin to substances introduced intradermally is now well recognized in a number of clinical conditions. The conception of a nonspecific element in this phenomenon has received important support from the study of cutaneous allergic phenomena in late syphilis. Such apparently specific substances as Klausner's palladin and Noguchi's luetin have been shown to produce their reaction by a nonspecific mechanism. Boas and Stürup [29] demonstrated a typical palladin reaction in late syphilis by using extracts of chancroidal bubo from a nonsyphilitic patient. Boas and Ditlevsen [30] duplicated this experiment by producing a luetin reaction in late syphilis with gonococcal and colon bacillus suspension. Sherrick [31] has gone a step farther and evidently artificially produced by the administration of iodids the cutaneous allergic state. He also observed that such colloidal substances as agar and starch gave similar reactions. Probably his most interesting observation was his reactiva-

29. Boas, H., and Stürup, J.: Untersuchungen über Kutanreaktionen mit Organextrakten bei Syphilitikern, Arch. f. Dermat. u. Syph. **120**:730-738, 1914.

30. Boas, H., and Ditlevsen, C.: Untersuchungen über Noguchis Luetinreaktion, Arch. f. Dermat. u. Syph. **116**:852-864, 1913.

31. Sherrick, J. W.: The Effect of Potassium Iodid on the Luetin Reaction, Preliminary Report, J. A. M. A. **65**:404-405 (July 31) 1915.

tion of a practically involuted luetin reaction by subsequent administration of iodids. Stokes [32] showed that agar makes an entirely satisfactory substitute for luetin in the luetin test applied in late syphilis, and that the reaction and the allergy on which it depends are alike nonspecific. He was also able to produce, artificially, a cutaneous allergy clinically similar to that produced in late syphilis by the injection of an homologous protein in the form of an emulsion of normal skin. By a series of injections he produced a reactivity to agar which in all respects experimentally imitated the allergy of late syphilis. These observations are essentially a proof that cutaneous allergy of certain types as observed in a disease like syphilis can be imitated artificially by the introduction of proteins other than those of the specific organisms of the disease. Thus far tuberculin reactions seem usually to have been regarded as specific antigen-amboceptor phenomena. The similarity of allergic phenomena in the skin in tuberculosis and in late syphilis makes the conception that the tuberculin reaction may be less specific in character than is generally supposed seem not unreasonable. Jadassohn's [33] attempt to explain his observations on tuberculin reactions in certain syphilitic lesions by what he calls "group reactions" are not without interest in this connection. Ingenious theories have been devised to explain the failure to react to tuberculin in certain types of tuberculous subjects. The possible lack of specificity in the reagent and the absence of certain specific factors usually seem to be overlooked. It must be conceded, however, that experimental proof of the completely nonspecific character of the tuberculin reaction is apparently lacking unless that produced by Meirowsky [34] can be accepted as such.

Whether or not we accept the allergic phenomenon as specific in character, the interesting intradermal injection experiments conducted by Bloch and Fuchs and used to support the theory that lupus erythematosus discoides chronicus is tuberculous in etiology are open to other interpretations than those the authors adopt. They injected intradermally extracts made from lupus erythematosus tissue into patients hypersensitive to tuberculin and argued from the reactivation of the papule by the subsequent injection of tuberculin that the extract contained either the bacilli or their toxins. Stokes conducted an experiment

32. Stokes, J. H.: Studies on Intradermal Sensitization. I. Intradermal Reactions to Emulsions of Normal and Pathologic Skin, J. Infect. Dis. **18**: 402-414, 1916. II. An Intradermal Reaction to Agar and an Interpretation of Intradermal Reactions, ibid., p. 415.

33. Jadassohn, J.: Einige Erfahrungen über lokale Reaktionen mit Moroscher Tuberkulin-Salbe bei Hauttuberkulose, Tuberkuliden, Syphiliden und Lupus erythematodes, Arch. f. Dermat. u. Syph. **113**:479-504, 1912.

34. Meirowsky, E.: Ueber die diagnostische und spezifische Bedeutung der v. Pirquetschen Hautreaktion, Arch. f. Dermat. u. Syph. **94**:335-364, 1909.

in which the experimental conditions were similar to those of Bloch and Fuchs to prove the nonspecific character of intradermal reactions. His patient was a late syphilitic with psoriatic lesions. Emulsion of the normal skin given intradermally gave a definite nodular reaction. Another injection of emulsion of a psoriatic lesion not obtained from the patient's skin, given seven days later, not only formed a definite nodule but produced a striking increase in the size of the first nodule. From the observation of this author it may be argued that in a sensitive person cutaneous allergic phenomena may be obtained with a nonspecific substance, such as emulsion of the skin of a healthy person. Thus nonspecific allergic responses may be obtained perhaps from an emulsion of tissue made from a lupus erythematosus lesion when injected into a subject highly sensitive to tuberculin. Bloch and Fuchs' inference that the lupus erythematosus lesion contains either dead tuberculous bacilli or their toxins can scarcely be unqualifiedly accepted. Another weakness of the intradermal tests performed by Bloch and Fuchs is that they used not only emulsions of lupus erythematosus, but that by doing this they actually used skin from admittedly tuberculous patients. To make their tests more significant a control should have been instituted by using for the control emulsion apparently healthy skin from the patients to learn whether the same phenomena might not have been produced as was produced by the emulsion from the lupus erythematous lesion.

COMMENT

It is apparent, therefore, that the tuberculous origin of lupus erythematosus discoides chronicus has not been proved by any of the experimental methods reported. The most modern and comprehensive clinical studies, on the other hand, definitely favor a belief in varied etiologic factors. It seems experimental work endeavoring to prove this latter conception is more promising than attempts to prove its purely tuberculous etiology.

CONCLUSIONS

1. The incidence of clinical tuberculosis in dermatoses admittedly of nontuberculous origin (32.1 per cent) is approximately as high as in lupus erythematosus discoides chronicus (35.7 per cent.).

2. Clinical tuberculosis is no more frequent in dermatoses-like erythema multiforme and erythema nodosum (32 per cent.), in some instances apparently of tuberculous origin, than in lupus erythematosus discoides chronicus (35.7 per cent.).

3. The frequency of clinical tuberculosis in patients with known tuberculids (84 per cent.) presents a striking contrast compared with the frequency of clinical tuberculosis observed in lupus erythematosus

discoides chronicus (35.7 per cent.). This contrast is so great that the belief seems acceptable that lupus erythematosus discoides chronicus cannot have a pathogenesis identical with that of the tuberculids.

4. The tuberculous origin of lupus erythematosus discoides chronicus has not been proved by experimental work. Clinical observation, including this statistical study, seems to favor varied etiologic factors.

A CONTRIBUTION TO THE CHEMOTHERAPY OF RHUS DERMATITIS AND TENTATIVE METHOD FOR TREATMENT

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The object of chemotherapy in rhus dermatitis (caused by *Rhus diversiloba*) is to imitate nature's method of overcoming the poison (lobinol) by the aid of substances that destroy the poison while the body cells are left unharmed or only slightly injured. The chemical agent employed, therefore, must possess a much stronger affinity for the toxic substance than for the body cells, that is, it must be more toxitropic than organotropic.

NECESSARY QUALIFICATIONS FOR THE REMEDY

In order best to accomplish this, the remedy should render the poison harmless, relieve pain, prevent sepsis, and aid in restoring the tissues injured by the poison to a normal condition. It may, therefore, be necessary to use two different formulas to be applied successively: one formula to neutralize the poison physiologically, and another formula to relieve pain, prevent bacterial infection, reduce the subsequent inflammatory changes in the cutaneous tissues and promote healing.

In order to choose the most fitting substance physiologically to neutralize this poison it is necessary to consider, apart from its chemical action on the poison, many other factors, such as its capacity for irritating the tissues, its toxicity, its solubility, its power of penetrating the tissues and of being absorbed by them, and the manner in which it reacts with the protein and other constituents of the tissues.

CHEMICAL NATURE OF THE POISON

It has been determined (McNair,[1] 1921) that the principal irritant of *Rhus diversiloba*, if pure and not a mixture, is probably an unsaturated compound of the aromatic series containing carbon, hydrogen and oxygen. The oxygen may exist combined as hydroxyl. The behavior of the poison is phenolic, and it may contain two hydroxyl groups in the ortho position.

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1. McNair, J. B.: Lobinol—A Dermatitant from Rhus Diversiloba (Poison Oak), J. Am. Chem. Soc., January, 1921.

PROPHYLACTIC SUBSTANCES

The first problem in prophylactic treatment is to prevent the penetration of the poison into the skin. This can be considered in regard to the aid of solvents and precipitants.

Lobinol (McNair,[1] 1921) is soluble in ether, chloroform, alcohol, methyl alcohol, benzin, (boiling point below 60 C.) benzene, toluene, xylene, ethyl acetate, nitrobenzene, oil of turpentine, glacial acetic acid, and 80 per cent. chloral hydrate. The above solvents could be used as washes to remove the poison from the surface of the skin, provided they were not injurious. All of the solvents, however, are deleterious and some of them have a decidedly harmful action on the skin, such as glacial acetic acid, turpentine, benzene, nitrobenzene, and chloral hydrate.

Von Adelung[2] (1913) carried out the following experiments with solvents. Equal parts of 10 per cent. tincture of rhus and cotton seed oil, castor oil, and cedar oil were rubbed on separate areas of the arm. In thirty-six hours the cedar oil mixture caused a slight eruption, which later developed into a fair patch of itching dermatitis. After the castor oil mixture had been applied for thirty-six hours there was a slight itching, but no eruption. The mixture containing cotton seed oil produced no dermatitis. In considering these results, von Adelung considered the possibility of cotton seed oil chemically combining with the poison and destroying its toxicity. However, when the mixture of oil and tincture were allowed to stand several days, the tincture formed a supernatant toxic layer. It is probable that the different degrees of dermatitis produced by these mixtures varied in accordance with the solubility of the poison in the oils involved. For instance, when phenol is made up in solutions with water, alcohol, glycerin, turpentine and cotton seed oil, it has been determined that when fingers are immersed in them the blanching, tingling sensations and anesthesia are greatest in the water solution and decrease as follows: alcohol, glycerin, turpentine and cotton seed oil. The solubility of phenol in these instances varies in the reverse order of its anesthetic effect. Therefore, if the results of von Adelung with the tincture of rhus are comparable, the solubility of lobinol is greatest in cotton seed oil, less in castor oil, and least in cedar oil.

From a practical standpoint, the removal of the poison from the skin by the use of solvents seems quite futile, for, unless a sufficiently large amount of solvent is used to remove the poison thoroughly the poison will be spread on the surface of the skin and thus enlarge the

2. Von Adelung, E.: An Experimental Study of Poison Oak, Arch. Int. Med. **11**:148-164, 1913.

diseased area. Then, too, lobinol has the power to form either a physical or chemical compound with the skin of such a nature that it is quite impossible to remove with soap and water or with solvent action.

Lobinol is precipitated from alcoholic solutions by lead acetate, silver nitrate, mercurous nitrate, cupric acetate, ferric chlorid, barium hydroxid, bromin, iodin, platinum chlorid, gold chlorid, uranium acetate and cupric nitrate. Some of these precipitants, for example, tincture of iodin, must be used in dilute solutions, in order to prevent harmful action on the skin. Some of the precipitates formed by these substances are still toxic, such as the precipitate formed with lead acetate.

It is theoretically possible to remove the poison, before it has penetrated or firmly adhered to the skin, by the combined action of both solvent and precipitant, for instance, by the use of an alcoholic solution of lead acetate.

CURATIVE SUBSTANCES

If the poison succeeds in penetrating the skin, it should be rendered harmless as quickly as possible. The chemotherapeutic agent, therefore, must have a penetrability and diffusibility greater than the poison.

If lobinol contains a polyhydrophenol group, it has consequently several possibilities of being changed to a nonpoisonous substance or substances. Among these processes is oxidation. Some of the oxidizers that have been used are potassium permanganate, potassium bichromate, silver nitrate, hydrogen peroxid, manganese peroxid, barium peroxid, magnesium peroxid, litharge, and manganese hydroxid. If these substances be added in laboratory glassware to the poisonous sap of the plant, it will be observed that potassium permanganate, silver nitrate, manganese peroxid, barium peroxid, magnesium peroxid litharge, and manganese hydroxid have the power, after a more or less lengthy period of contact, to render the poison harmless. Some of these substances, for instance, litharge and barium peroxid, because of their insolubility and inability to penetrate the skin, cannot be used as remedies. Silver nitrate becomes too irritating when used in sufficiently strong solution. Many substances which enter into the composition of the tissues inhibit its action in a marked manner. The sensitivity to light and the staining property of silver compounds are also objections to their use. Von Adelung[2] (1913) has shown that hydrogen peroxid was without appreciable beneficial effect, while potassium permanganate did have the power to render the poison nontoxic. Potassium permanganate, however, has an injurious action on the skin and is not as efficient a remedy as some other remedies, as will be shown later.

Lobinol has an ability to react with nitric acid, probably due to its phenolic properties, to form a nitrated compound. As is well known,

nitric acid, even in dilute solution, stains the skin a bright yellow or yellowish-brown, which makes its use undesirable.

Lobinol evidently has the property of forming compounds with sodium and potassium, but both of these when first formed are poisonous.

Bromin and iodin form compounds with the poison, probably owing to its unsaturated nature. When experimented with in vitro, these halogens reduce the toxicity. When applied to the skin, however, they coagulate the proteins and irritate the tissues. The following five iodin compounds were experimented with: ethyliodid, iodol in alcohol, iothion, iodipin, (iodized sesame oil) and colorless tincture of iodin. In trying these substances, five areas of skin, of practically the same thickness, on the flexor surface of the forearm, were inoculated with equal amounts of fresh *Rhus* sap. These different areas were protected by doughnut shaped corn plasters, and the various iodin preparations were applied. The benefit derived from these substances increased in the following order: colorless iodin, iodipin, iothion, iodol in alcohol and ethyl iodid. None of these, however, were very beneficial, either in reducing the pain or in promoting healing.

The best success in the search for a remedy was obtained by taking into consideration the body defense against phenolic compounds. Whether or not lobinol has the power to form an ester with glycuronic acid, either within the body or in laboratory glassware, has not been determined. With an idea that glycuronic acid might be formed from glucose by the action of the body cells, a 5 per cent. aqueous solution of chemically pure crystalline glucose was applied to an area of rhus dermatitis. Although glucose has a slight irritant action on the skin, as is exemplified in diabetes mellitus, healing was promoted more rapidly in the area to which the glucose had been applied than in a check patch of dermatitis on which no remedy was used.

The power of lobinol to form a sulphonic ester in the body is quite probable. With this in view the following nine sulphur compounds were used similarly to the iodin preparations: sodium sulphate, sodium ethyl sulphate, sodium pyrosulphate, sodium dithionate, sodium sulphite, sodium ethanol 1, 2-diacidsulphite, sodium pyrosulphite, sodium thiosulphate and taurin. Of these nine preparations, sodium sulphite and sodium ethanol 1, 2-diacidsulphite gave the best results. These results, too, were superior to any results previously listed in this paper.

It is likely that iron may be one of the chemical elements enrolled in the body defense mechanism. As a tissue source of this there are the erythrocytes and protein. Whether or not the iron of the body plays a part in the physiologic neutralization of lobinol, cannot at present be stated. Ferric chlorid, however, despite its coagulating effect on

protein and irritant properties, with the possible exception of sodium sulphite and sodium ethanol 1,2-diacidsulphite has been found to be the most efficient remedy for the disease. At my suggestion a 5 per cent. mixture of ferric chlorid in 50 per cent. aqueous glycerol has been successfully used on bed patients with severe cases at the infirmary of the University of California. Its use there was discontinued on account of the iron staining the bed linen.

If further opportunity presents itself for continued experimentation on the chemotherapy of this disease it is hoped that a preparation may be found which, like those of Ehrlich in syphilis, will be more toxitropic, less organotropic, and have fewer of the disagreeable features of the substances presented herewith.

CLASSIFICATION OF THE CHEMOTHERAPEUTIC AGENTS ACCORDING TO THEIR ACTION IN VIVO AND IN VITRO

The chemotherapeutic agents in rhus dermatitis may be classified according to the manner in which they react with lobinol.

1. A substance may render the poison nontoxic when in vitro, but not necessarily exert this effect in vivo. Litharge, for example, although it is able to decrease the toxicity of lobinol when in laboratory glassware, is unable to cure rhus dermatitis because of its insolubility and consequent inability to penetrate the skin.

2. Some substances capable of therapeutic effect under certain conditions are without effect in others, either in vivo or in vitro. For instance, solvents are ineffective in removing lobinol after it has firmly combined with the skin. Some remedies when too highly diluted also fail.

3. Substances exerting a marked effect in vivo may have no effect in vitro.

Solutions of dextrose, sodium sulphite, or magnesium sulphate in sufficient dilution are without apparent reaction on lobinol in vitro, yet when applied to rhus dermatitis in its initial stages they have a marked therapeutic value. This effect may be brought about by the remedial substance undergoing some modification in the body cells, so that it is changed into an active agent and unites with lobinol to form a corresponding physiologic neutral ester or other comparatively harmless substance. Like phenolic compounds, lobinol may probably form a ester with either glycuronic acid or sulphuric acid. Glycuronic acid probably has its origin in the body from dextrose through the oxidation of its terminal alcohol group. Such oxidation, however, could only take place when the aldehyde group is protected from oxidation.

Magnesium sulphate, which has been found of benefit in this disease by von Adelung (1913), may owe its effect not so much to its chemical action on the poison as to its salutary effect on the nerves. A review of the experiments of Solis-Cohen [3] with magnesium sulphate on the nervous system points in this direction. Meltzer [4] (1918) has shown the beneficial effect of a 25 per cent. solution in experimental first and second degree burns.

An effect in vivo and not in vitro may also be obtained by interference with the toxic function of lobinol without its direct chemical change, for example, substances which harden the skin or increase the thickness of the corium.

Part of the remedial value of iodin, picric acid, and ferric chlorid in rhus dermatitis may be due to their ability to form a layer of precipitated and denatured protein on the injured surface. This layer acts as a protection not only against the penetration of the poison, but also against air and traumatic injury. An effect in vivo and not in vitro may possibly occur also merely by a stimulation of the natural protective mechanisms with or without the assistance of either of the foregoing methods.

4. Substances may have a destructive action on the toxicity of lobinol both in vitro and in vivo, for example, feric chlorid, iodin and potassium permanganate.

TENTATIVE METHOD FOR EXTERNAL TREATMENT

Rhus dermatitis, like burns, may be classified into three degrees of intensity as follows:

First Degree—Hyperemia or Erythema.—The skin has a bright red or purple hue, which disappears temporarily under the pressure of the finger and which gradually blends with the normal color of the skin around. There is a transitory swelling of the poisoned area, with perhaps slight oozing of serum from the surface. The superficial layers of the cuticle usually peel off later.

Second Degree—Vesication.—This stage has all the features of the first degree in aggravated extent. Some hours later vesicles appear. No permanent scar remains after the healing of this degree of dermatitis, but the part may show for a time a slight depression or dark colored pigmentation. Infection by septic bacteria may induce superficial suppuration and so delay repair.

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3. Solis-Cohen, S.: The Analgesic Effect of Local Applications of Solutions of Magnesium Sulphate and Other Salts, J. A. M. A. **53**:1892 (Dec. 4) 1909.

4. Meltzer, S. J.: The Application of a Concentrated Solution of Magnesium Sulphate to Scalds and Burns, J. Pharmacol & Exper. Therap. **12**: 211-214, 1918.

Third Degree—Destruction of True Skin.—This seldom occurs in rhus dermatitis. When it does, permanent scars form.

Until further opportunity for experimentation and clinical observation occurs, Barthe de Sandfort's[5] (1914) paraffin treatment of burns is given as tentative for the more severe cases of rhus dermatitis.[6]

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5. De Sandfort, Barthe: De la kérithérapie (nouvelle application thermale des paraffines), 3rd Série **71**:560-562.

6. In addition to the references already given, the following may be of interest:

Anonymous: The Leukocyte Count as a Guide to Treatment of Wounds, Brit. M. J. **1**:465-466, 1917.

Sollmann, T.: Convenient Devices for Melting Paraffin for Burns, J. A. M. A. **68**:1895-1896 (June 23) 1917.

Correspondence

DERMATOLOGIC ETYMOLOGY

To the Editor.—I was much interested in the article which appeared in the April number on "Dermatologic Etymology" by Dr. George Henry Fox, and I hope that it will be published in pamphlet form so that it may be easily accessible. Most of the present-day textbooks on dermatology omit this information, which perhaps does not properly belong in them. Many of the medical dictionaries do not contain it, and the oversupply and depreciated price of secondhand Greek dictionaries indicate that the medical student does not search for it in such books. Some knowledge of the meaning of the names used in dermatology is of great assistance to the beginner, and Dr. Fox has furnished it in an interesting form and so compactly that it would be a pity not to have it separately obtainable.

I was amused at the slightly apologetic ending of the article. First because the name of Fox has so long held such a position in the dermatologic world that any apology for any dermatologic writings by any Fox is unnecessary. Second, because I surmise that he was apologizing to himself for writing on the *genealogy* of dermatologic terminology instead of confining himself to *dermatology*.

I may be mistaken in this, but in any case, had he desired to do so, he might have cited an excellent dermatologic precedent for his article in Robert Willan. Willan, though not a genealogist, was a fellow of the Society of Antiquaries and read before that Society, and later published, "A List of the Antient Words at Present Used in the Mountaneous District of the West Riding of Yorkshire."[1] In this list are a number of old popular medical terms, but there is no need of referring to them.

It is surprising that Dr. Fox was able to restrain himself from wandering beyond the limits he had planned for his article, when so excellent an opportunity for a genealogic (sic) excursus was presented by the word *syphilis,* the origin of which has been the subject of considerable speculation. Fracastor, who first used it in his poem, admitted the paternity, sixteen years after the birth of the child, in his book, "De Contagionibus et Contagiosis Morbis," saying "It was I who, in my poetical writings, first gave it the name of Syphilis."[2] But he never revealed the maternity of his child, and after his death Fallopius began to investigate the question and came to the conclusion that the mother was the Greek *σύν-φιλέω*, the companion of love. Dr. Fox accepts Fallopius' account of the maternity, and I, not being a genealogist, would not think of disputing it. Some derive it from another Greek origin, some from Hebrew, some from Arabic, and Pflug, the latest writer on the subject I have run across, derives it from the Sanskrit.

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1. Archaeologia **17**:138-167, 1811; reprinted in English Dialect Society; reprinted Glossaries, London **2**:76-98, 1873.

2. Fournier's edition of Fracastor, Paris, 1869, p. 154.

I had at one time thought of summarizing the different views in a brief article, but gave up the idea as I knew I could only make it as dry as dust. Dr. Fox, dermatologist, syphilographer, genealogist and etymologist, can do it and make it interesting, and in order to stimulate and assist him, I append a few references on this subject:

Buret, F.: Syphilis in Ancient and Prehistoric Times. Translated by Ohmann-Dumesnil, Philadelphia, F. A. Davis Co., 1891.

Downing, A. F.: Syphilis: The Story of Its Treatment, Old and New, Boston M. & S. J. **177**: 715-720, 1912.

Pflug, W.: Syphilis oder Morbus Gallicus? Eine etymologische Betractung, Trübner, Strassburg, 1907.

Turner, E.: L'etymologie du mot syphilis; les premiers livres publies sur cette maladie jusqu'a l'apparition du poeme de Fracastor, Ann. de dermat. et syph. **3**: 423, 489, 564 and 665, 1882.

Späth: Einige Worte über die Etymologie des Worts Syphilis, Med. Cor.-Bl. d. Würtemb. aerzt. Ver. Stuttg. **11**:49, 1841.

Timmermans, A.: De l'Etymologie du mot syphilis, J. d. mal. cutan et syph. **10**: 410-420, 1898.

I am sure that Dr. Fox will not be able to resist the title, "Eine etymologische Betrachtung," which Pflug gave his monograph.

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News and Comment

MEETING OF MINNESOTA DERMATOLOGICAL SOCIETY

The Minnesota Dermatological Society will hold its meeting on Aug. 5 and 6, 1921. The society will meet on August 5 at the Medical School of the University of Minnesota, Minneapolis, and on August 6 at the Mayo Clinic, Rochester, Minn. Both sessions will be clinical in character. At the conclusion of the first day's session at Minneapolis, the trip to Rochester will be made by automobile or train, arriving at Rochester on the evening of August 5. Visiting dermatologists will be welcome to attend the meetings.

Abstracts from Current Literature

LE MARIAGE DES SYPHILITIQUES (THE MARRIAGE OF SYPHILITICS). Committee Report, Bull. Soc. franç. de dermat. et syph. **8**:319, 1920.

This is the discussion of a committee report which was published in a recent issue of this bulletin (page 232, 1920). The following typical phases of the matter were considered:

1. The patient is seen and treated in the primary period and before the appearance of secondary symptoms or of a serologic reaction. Such a patient, responding favorably to a year's intensive treatment, would be permitted to marry at the end of the second year, during which time constant observation must show freedom from syphilitic manifestations, both clinical and serologic.

The treatment must be intensive and the laboratory must be dependable. Darier urges moderate treatment during the second year, and Leredde emphasizes the necessity of considering the individual quality of the syphilis in each case. Goubeau would extend the period to three years, and he would also give some treatment after marriage. Balzer would extend the time to four or five years, with more treatment, and Thibierge says two years should be the minimum.

2. The patient is seen and treated after the appearance of serologic reactions or even after the appearance of secondary symptoms. Here the committee favors two years' intensive treatment followed by a two years' surveillance with occasional tests of the blood and spinal fluid.

Goubeau would advise treatment extending over three years, with permission to marry at the end of that time providing the patient has early become and remained clinically and serologically negative. In any case, he says, the time should be x plus three years, x representing the length of time required to abolish all symptoms. Jeanselme counsels against pronouncing a cure too soon on purely laboratory grounds, for a negative reaction, even after a long time, may be replaced by a positive reaction. Thibierge follows the plan of Fournier, with four years of treatment and a period of eighteen months after the last manifestation.

3. If there is an irreducible blood serum reaction with a normal spinal fluid, five or six years of treatment are advised, and if the patient is a woman she should receive treatment thereafter when pregnant.

4. If in spite of the treatment indicated, the seroreaction being positive or negative, the spinal fluid shows a meningeal reaction and if prolonged treatment fails to dispel the symptom, marriage is contraindicated.

5. If the patient presents symptoms of involvement of the nervous system, marriage is interdicted. However, Leredde cautions against interpreting as syphilitic every irregularity of the pupil, or every alteration in the knee reflex.

6. If the candidate is an old syphilitic patient who can furnish only vague data concerning his previous treatments and if there are nervous symptoms, marriage is forbidden. If the blood or the spinal fluid shows a positive reaction thorough treatment is indicated. In a case entirely negative, and negative also after a provocative test, a year's treatment should be sufficient.

A syphilitic woman must be more thoroughly scrutinized than a man before being allowed to marry, and whenever pregnant she should be treated.

The question of "mariage blanc" is briefly discussed, and also that of the marriage of congenital syphilitics. The plan for the treatment of congenital syphilis is much the same as that for acquired syphilis, and irremediable organic lesions are a permanent contraindication to marriage.

PARKHURST, New York.

THE VALUE OF THE WASSERMANN REACTION IN OBSTETRICS, BASED ON THE STUDY OF 4,547 CONSECUTIVE CASES. J. WHITRIDGE WILLIAMS, Johns Hopkins Hosp. Bull. **31**:335 (Oct.) 1920.

A study was made of 4,547 pregnancies in which a Wassermann test was made, in each case, on the maternal and fetal blood. The placenta was examined microscopically, and if the child died within the first two weeks of the puerperium, necropsy was performed if possible. These conclusions were reached.

1. It is hazardous to draw any conclusion concerning the condition of the placenta or of the child from the existence of a positive maternal Wassermann reaction during pregnancy.

2. The existence of a positive Wassermann reaction on the part of the mother does not necessarily mean that her child will develop syphilis.

3. A positive Wassermann reaction at birth does not necessarily imply that the reaction will remain positive; and conversely, a negative Wassermann reaction at birth does not necessarily mean that it may not become positive later.

4. Demonstration of syphilitic changes in the placenta offers twice as great a probability of giving correct information concerning the condition of the child as a positive Wasserrmann reaction on the part of the mother.

5. The possibility of spermatic infection and the admissibility of Colles' law have not yet been conclusively proved or disproved. Williams believes such a possibility is supported by: (1) Conversion of a positive maternal reaction into a negative reaction after delivery without the administration of antisyphilitic treatment. It must be borne in mind that such a positive reaction may occasionally be a manifestation of the establishment of an active immunity on the part of the mother against a syphilitic product of conception. (2) Clinical evidence. A case of probable superfecundation is described, in which a woman had intercourse with her husband and also with a syphilitic patient. One of the double ovum twins showed at necropsy visceral changes of congenital syphilis and a syphilitic placenta; the other twin and its placenta were apparently normal. The mother gave no evidence of a syphilitic infection, and several preceding pregnancies had resulted in the birth of normal children. (This case occurred in pre-Wassermann days.)

ZIMMERMANN, Baltimore.

UEBER LICHENOID ERUPTION BEI PYODERMIE (LICHEN PYODERMICUS) (LICHENOID ERUPTION WITH PYODERMIA [LICHEN PYODERMICUS]). HANS T. SCHREUS and ELIZABETH GOEHL, Dermat Ztschr. **31**:273, 1920.

The authors, and Prof. E. Hoffmann, in whose service the work was done, believe that they have observed a new, or at least heretofore undescribed, syndrome. Two children, 12 and 15 years old, respectively, presented eruptions on the skin made up of isolated pustular lesions from needle head to linseed

size, which were on the borders of an isolated single five-mark piece size lesion on the left cheek which (in one child), was covered by a brown crust under which there was an accumulation of pus on an eroded base. Some pustules were on the ear, on the borders and in the hairy portion of the scalp. The buttocks, the abdomen and the flexors were covered with large and small reddened follicular papules. Some of these were capped by a small crust, others had a central depression. They were lichenoid and were distributed singly and in groups. The face and extremities were free. The mucous surfaces were also free. The older child had a red surface for the lesions, and to the feel there was some suggestion of the nutmeg-grater surface. The temperature was slightly raised.

The differential diagnosis, according to the authors, ruled out trichophytosis with secondary lichen trichophyticus because of the absence of the organisms, and the character of an intracutaneous test. In one of the cases lichen scrofulosus was ruled out on account of lack of confirmatory findings of tuberculosis either in the lungs or on von Pirquet tests. The course of the disease also aided in the differentiation as the pyodermia soon cleared up. In the second case the suggestion of scarlet was slight. Papular syphilis was excluded by negative Wassermann and Sachs-Georgi reactions.

The lesions cleared without local therapy, and it is believed that this is proof that the eruption was more in the nature of an exanthem, and the "Allergie" phenomenon is called on to explain some of the facts.

As a sort of addenda, the observations of the authors are recorded that the complement-fixation test in furunculosis is more often positive after roentgen-ray treatment, and that the same holds true for trichophytosis. Perhaps the destruction of the organism in each instance increases the complement-fixing power.

GOODMAN, New York.

SUR UN CAS D'EPIDERMOLYSE BULLEUSE CICATRICIELLE A CYSTES EPIDERMIQUES (REGARDING A CASE OF CICATRICIAL EPIDERMOLYSIS BULLOSA WITH EPIDERMAL CYSTS). J. MONTPELLIER and A. LACROIX, Ann. de dermat. et syph. **12**: 575, 1920.

A native Algerian, 28 years of age, stated that he had had the disease for only a year, but he had been treated for trichiasis three years previously. This fact and the amount of atrophy present suggested to the authors that the duration was probably several years. There had been no trace of the disease in any member of the family.

Clinically the picture was classical, with bullae in various stages, small cysts and atrophy; Nicolsky's sign was positive on the skin of the extremities but not of the trunk.

Fortunately, five biopsies were obtained, and the histologic reports are given in detail. Bullae in all stages, the dystrophic skin and the epidermal cysts were studied thus. It was found that the roof of each bulla consisted of the whole epidermis, separated entirely from the derma. Secondary infection was frequent, and this dermal inflammation gave rise to a cicatrix. It is emphasized that there were no preexisting epidermic lesions to account for the formation of bullae, the real cause being probably a defect in adherence between derma and epidermis. It is thus different from pemphigus, which seems to show a special fragility of the epidermis, and from epidermolysis hereditaria traumatica, in which the splitting also occurs within the epidermis itself.

The study of the cysts is interesting. They appear only at the sites of previous bullae, and are found beneath the roofs of these bullae. They probably develop from the sebaceous apparatus which has been severed from the overlying epidermis by the formation of the lesions and undergoes cystic degeneration. The sweat glands, on the other hand, do not all atrophy, for in the case presented there was a considerable hyperhidrosis of the palms and soles.

PARKHURST, New York.

SECOND IMPROVED METHOD FOR DEMONSTRATING SPIROCHAETA PALLIDA IN THE TISSUES. ALFRED SCOTT WARTHIN and ALLEN C. STARRY, J. A. M. A. **76**:234 (Jan. 22) 1921.

Warthin and Starry present a method which they consider as great an improvement on the first method proposed by them as that was on the older methods, in that it possesses these advantages: 1. The time is much shortened; the entire procedure may be carried out in less than one hour after the sections have been mounted on cover-glasses. 2. The results are more certain. Spirochetes have been demonstrated in tissues in this method when all others have given negative results. Tissues are fixed in neutral formaldehyd, embedded in paraffin. Sections are cut and mounted on cover-glasses with albumin fixative. The paraffin is removed with xylene, alcohol and water. Next the cover-glass is rinsed with the section in 2 per cent. silver nitrate; the wet section is covered with another clean cover-glass, so that they are held together by capillary attraction; then they are placed carefully in a bottle of 2 per cent. silver nitrate and placed in an incubator for from thirty minutes to an hour. They are removed from the silver nitrate and the cover-glasses are separated. The cover-glass with the section is then placed in this reducing mixture:

	C.c.
Two per cent. silver nitrate solution	3
Warm glycerin	5
Warm 10 per cent. aqueous gelatin solution	5
Warm 1.5 per cent. agar suspension	5
Five per cent. aqueous hydroquinone solution	2

After the section is reduced, it is removed and rinsed in 5 per cent. sodium thiosulphate (hyposulphite) solution; rinsed in distilled water and mounted—absolute alcohol, xylene, balsam. The method is described in detail.

WAUGH, Chicago.

SUR UNE FORME ERYTHRODERMIQUE DU LYMPHOGRANULOME BENIN (CONCERNING AN ERYTHRODERMIC FORM OF BENIGN LYMPHOGRANULOMA). J. SCHAUMANN, Ann. de dermat. et syph. **12**:561, 1920.

A clerk, 36 years of age, first noticed the presence of a palpable epitrochlear lymph node at the age of 14 years; at 15 he had a "bronchial catarrh" of three weeks' duration, and at 24 a troublesome cough which was readily overcome. In 1914 the first cutaneous manifestation appeared as a red spot on the scalp which persisted in spite of local applications. In 1917, similar spots began to appear on the legs, where they soon became confluent in places. The lesions have since come and gone insidiously, always with a predilection for the extensor aspects of the extremities.

An examination, made in May, 1917, showed the presence of large and small erythematous plaques, noninfiltrated and covered by a slight dry scale.

There were no subjective sensations or malaise. Some lymphadenopathy was noted, especially in the mediastinum; the spleen was enlarged and the liver was involved. The differential blood count showed a percentage of large mononuclear lymphocytes that varied between 8 and 11.

Biopsies were taken from the scalp, the leg and an epitrochlear lymph node, and the sections resembled in structure the miliary lupoid of Boeck. A complete histologic report is given.

It seems that just as we may have tumors or erythrodermas in leukemia and pseudoleukemia, and may encounter either the macular or the nodular form of leprosy, there are also two varieties of lymphogranuloma, the erythrodermic and the tumor-forming. What conditions determine the appearance of one or the other? Perhaps the virulence of the agent and the condition of the soil.

PARKHURST, New York.

RELATIVE EFFECTIVENESS OF VARIOUS FORMS OF TREATMENT IN NEUROSYPHILIS: OBSERVATIONS OF THE COMPARATIVE VALUE OF ROUTINE INTRAVENOUS TREATMENT, SPINAL DRAINAGE AND ARSPHENAMIZED SERUM INTRASPINALLY (SWIFT-ELLIS). JOHN H. STOKES and EARL D. OSBORNE, J. A. M. A. **76**:708 (March 12) 1921.

Twenty-five patients with neurosyphilis were placed on routine treatment and in conjunction received spinal fluid drainage of from 30 to 70 c.c. at weekly intervals. The average number of spinal fluid withdrawals in each case was five. After this treatment had been completed, two of the patients gave negative spinal fluid Wassermann reactions and in six a reduction in the number of lymphocytes was observed.

On the other hand, ten of these patients (some months after completion of the combined drainage and routine treatment) were given the Swift-Ellis-Ogilvie form of intraspinal therapy. The average number of intraspinal injections given was five. At the completion of this number of treatments, five patients showed a complete reversal of the spinal fluid Wassermann reaction to negative as compared with two after drainage. A reduction in the cell count to 11 or below was also noted in these five patients.

On comparison with cases of patients with neurosyphilis which were treated by routine intravenous arsphenamin and either mercurial inunctions or injections of soluble salts of this drug, no advantage was noted when drainage of the spinal fluid in addition to this medication was performed.

Stokes and Osborne make no pretense at setting forth final conclusions in the matter, but their experience leads them to the belief that spinal drainage has no superiority over an equal amount of routine treatment without drainage, and that arsphenamized serum given intraspinally appeared to produce more satisfactory and more permanent results.

MICHAEL, Houston, Texas.

THE VALUE OF THE CULTURAL METHOD IN THE DIAGNOSIS OF CHANCROID. OSCAR TEAGUE and OLIN DEIBERT, J. Urol. **4**: (Dec.) 1920.

Owing to the fact that the Ducrey bacillus loses its characteristic chain arrangement on passing from the tissue into the purulent discharge of the ulcer, it is difficult to make a definite diagnosis of chancroid by examination of smears of pus. Accordingly Teague and Deibert have devised a rapid and

successful method of diagnosis of chancroid by culture. Clotted rabbit's blood is used as the culture medium. Results can be obtained in 12 to 24 hours. In 274 cases with sores on the penis, for the most part unselected, 104 yielded cultures that were positive for the Ducrey bacillus. On the 134 negative cases, satisfactory notes were made on only 69. Of these 42 almost surely were patients with chancres, 8 had erosions or herpes; 8 had sores almost healed; 5 had sores that in all probability were nonvenereal, and only 6 were recorded at the time of culture as "probably chancroid." In view of these findings, the authors feel that their method of culture yields a diagnosis of chancroid in a large percentage of cases—probably above 90 per cent.

The authors do not claim that the methods are entirely new, but they demonstrate for the first time that the culture procedure is a practical method for the diagnosis of chancroid.

SENEAR, Chicago.

RECTAL INJECTIONS OF MASSIVE DOSES OF NEO-ARSPHENAMIN.

H. G. MEHRTENS, J. A. M. A. **76**:574 (Feb. 26) 1921.

The difficulty or impossibility in occasional instances of administering arsphenamin and neo-arsphenamin by the intravenous route, as well as the desirability of finding a simpler method for their use in children, has led Mehrtens to investigate the value of rectal injections of these drugs. Previous investigations of the value of this method have been contradictory, but it was conceivable that the smaller doses used in the earlier studies were responsible in part, at least, for the poor results obtained.

The author has found it possible to give 4 gm. of neo-arsphenamin by rectum without appreciable ill effects. Arsphenamin was so irritating by this route as to cause its abandonment. Neo-arsphenamin was prepared as for intravenous injections. The volume of each dose was 100 c.c.

One hundred and twenty-five patients have been treated in this manner. Nearly all were tabetic or cerebrospinal syphilitic patients, and therefore the clinical results cannot be evaluated properly at this time; but the improvement was at least as rapid as that observed when the intravenous method was used. This applies equally to the spinal fluid findings. Determinations of the arsenic content of the blood, spinal fluid and urine were made. Arsenic persists longer in the blood after the rectal method with large doses than after intravenous introduction. Approximately the same concentration in the spinal fluid was found with either method. Three times as much arsenic was excreted in the urine following rectal injection than by the venous route.

The author incidentally mentions that while arsphenamin was being used in the irritating doses two long standing cases of pruritus were apparently cured.

Rectal injections of large doses of neo-arsphenamin have a place in therapeutics.

MICHAEL, Houston, Texas.

ZUR FRAGE DER PRAKTISCHEN BRAUCHBARKEIT DER AUSFLOCKUNGSREAKTION NACH SACHS-GEORGI (CONCERNING THE PRACTICAL VALUE OF THE SACHS-GEORGI REACTION).

ELSBETH JACOB, Dermat. Ztschr. **31**:287, 1920.

Jacob concludes that the only reaction which is to be considered for practical work is the second modification of Sachs-Georgi, the reading after incubation for from eighteen to twenty hours. The results when properly read, from properly prepared antigen with good clinical controls are in accord with

the history and physical findings. In early primary syphilis the result is positive earlier, and in improperly or incompletely treated syphilis the positive result remains longer than the positive results in the Wassermann reaction. False strong positives were not encountered with the Sachs-Georgi reaction. The percentage of weak and nonspecific positives was hardly larger than with the Wassermann reaction. The Sachs-Georgi reaction in the hands of a well trained investigator becomes a welcome addition to the Wassermann reaction in the study of clinical material from a skin clinic or practice. The final conclusion is a broad one: The Sachs-Georgi is identical with the Wassermann reaction.

Reference to other abstracts of papers on the Sachs-Georgi reaction have led to the belief that the reactions complement each other, and that as yet the more recent test cannot stand alone. Levinson and Peterson "are of the opinion that the Sachs-Georgi reaction offers a valuable aid in the routine examination for syphilis when used in conjunction with the Wassermann reaction."

(The reader is advised to review the paper by Levinson and Petersen, "The Sachs-Georgi Reaction for Syphilis," which appeared in the March number of the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY, page 286 and a paper by Logan on the "Sachs-Georgi Test," *Lancet* **1**:14, 1921. These are the only two papers [other than abstracts] in English on this subject.)

GOODMAN, New York.

LE SERO-DIAGNOSTIC DE LA SYPHILIS (THE SERODIAGNOSIS OF SYPHILIS). L. SPILLMANN and P. LASSEUR, Ann. de dermat. et syph. **11**:507 and **12**:586, 1920.

Realizing that while many authorities place a high estimate on the value of the Wassermann reaction, others consider it dangerously uncertain, the writers seek to point out the chief causes of error. In the first place, the operator must be thoroughly familiar, not with the Wassermann reaction alone, but with biologic reactions in general. He must familiarize himself with the work of the pioneers in this field.

With the aid of algebraic formulae the quantitative and qualitative variations of the reaction are explained. The physicochemical factors are considered and many points of caution in technic are mentioned. The matter of antigens is discussed and the use of cultures of *Spirochaeta pallida* in this rôle, which is thought inadvisable on account of their variability. The work of Vernes in the direct measurement of flocculation is mentioned.

Concluding, the authors refer to their results in a series of cases to prove the true value of the reaction; they cite a number of individual cases also. In experienced hands the results are well within the allowable limits of experimental error, and acknowledging it to be imperfect, we are advised to avail ourselves of its valuable aid, always considering it merely as one of the signs, until some better test may be devised. Its use is recommended (1) as a diagnostic factor in difficult cases, (2) as a guide in treatment and (3) in prognosis.

PARKHURST, New York.

THE TREATMENT OF RHINOPHYMA BY THE DESICCATION METHOD. W. L. CLARK, Urol. & Cutan. Rev. **25**:63 (Feb.) 1921.

The author has treated ten patients with rhinophyma by this method and reports satisfactory results. The cosmetic effect is superior to that obtained when simple excision is practiced.

After the enlarged follicles have been emptied as thoroughly as possible, the tissue is anesthetized with procain and epinephrin. The hypertrophic area is then desiccated as deeply as necessary and pared off with a sharp scalpel or razor until the nose is restored to its normal size and shape. Only the most severe cases require paring; in those of moderate degree contraction of the scar tissue, which results from the desiccation, will suffice to restore the nose to approximately its normal size.

In four instances, there was improvement in the general health of the patients following this treatment. This may be attributed to the relief from focal infection seated in the infected follicles. One patient had an associated chronic, purulent bulbar conjunctivitis which was considered secondary to the infected sebaceous glands. This promptly cleared up after desiccation of the rhinophyma.

MICHAEL, Houston, Texas.

TWO CASES OF PSORIASIS TREATED BY DANYSZ' METHOD. H. W. BARBER, Proc. Roy. Soc. **14**:24 (Feb.) 1921.

This report calls attention to the theory of Danysz discussed in his book ("Origine, Evolution et Traitement des Maladies Chroniques Non-contagieuses") that certain forms of eczema, urticaria, angioneurotic edema and certain other conditions, such as asthma, chronic albuminuria and many gastro-intestinal disorders, are due to a state of "immunity anaphylaxis." The theory is supported by the fact that rabbits repeatedly injected with minute doses of foreign serum or bacterial protein for several weeks gradually develop chronic diseases of various kinds, such as arthritis, alopecia, paralysis, etc. The same is true of horses used for preparation of curative serums. Danysz attempts to counteract this anaphylactic state by daily injections of bacterial proteins obtained by autogenous fecal cultures. Thus the method is comparable to the nonspecific protein treatment. Two cases were presented that showed distinct improvement after twelve injections given on alternate days.

GUY, Pittsburgh.

INTOXICATIONS ET MORTS PAR LES ARSENOBENZENES—LEUR CAUSE (INTOXICATIONS AND DEATH FOLLOWING ARSPHENAMIN—THEIR CAUSE). C. LAURENTIER, Ann. de dermat. et syph. **1**:38, 1921.

A young man, two days after receiving 0.75 gm. of neo-arsphenamin, developed symptoms of extreme irritation of the central nervous system and albuminuria. In four days both disappeared. A second patient received the same amount of the same preparation, and two days later he developed extreme nervous symptoms as well as an acute retention of urine. Necropsy examination revealed only pulmonary edema.

In 1918, in Audry's service, 0.75 gm. of a neo-arsphenamin preparation was administered to each of five patients. Three reacted violently the next day, but recovered. The other two, between fifty-two and fifty-eight hours after treatment, developed eclamptic symptoms with a lethal exitus. Necropsy examination revealed nothing of importance.

It has been noticed that accidents follow the use of a new series of ampules, erythematous manifestations being frequent and icterus rare in the author's experience. Of course, the other accepted causes of accidents are undeniable, but the drug itself seems often to be at fault, and the chemists have further work to do with this in mind.

PARKHURST, New York.

URTICARIA UND SAEUREWIRKUNG (URTICARIA AND ACID ACTION). VIKTOR KOLLERT, Dermat. Ztschr. **31**:281, 1920.

It is admitted that the lymph plays an important rôle in the formation of the urticarial wheal. Experimentally and otherwise this has been confirmed. Concerning the cause of the control of the local edema, opinion is divided. The author has made certain observations which lead him to believe that acids may be the cause of the urticaria manifestation. Among his patients he found that the eating of apples caused urticaria in four cases. The acids of the apple were held responsible. As a further confirmation of the acid idea, he advances the observation that urticaria in women during menstruation and in the early months of pregnancy is more frequent, and that dermatographism is more readily evoked than at other times. The supposed increase of acidity at these times is held responsible. Many other reasons to believe that acids are the cause of urticaria are advanced; for example, the urticaria following the injection of acid arsphenamin. Before closing his paper, however, the author insists that he must not be misunderstood, and that he does not hold the acids alone responsible, but rather a disturbance of ion concentration. The treatment of urticaria advised is, of course, the use of alkalies.

GOODMAN, New York.

GRANULOMA INGUINALE. M. F. CAMPBELL, J. A. M. A. **76**:648 (March 6) 1921.

Five cases of this disease, occurring in the urological service of Bellevue Hospital, are reported. Two of these five cases have been previously described by Symmers. All of the patients were native, male negroes. The cell inclusions of Donovan were demonstrable in four of the cases. The organism seems to bear direct etiologic relationship to the disease. It likewise seems probable that it is a secondary invader, promoting the process of ulceration.

Three of the patients presented chronic, ulcerating granulomas of the genitals and groin. One patient had the rare elephantiasis variety affecting the scrotum. The clinical features of one case are not described.

Tartar emetic was administered intravenously to each patient. One was cured, three were improved but discontinued treatment prematurely, and one patient died. Death resulted from sepsis due to infection of the involved scrotum (case with elephantiasis variety).

The author believes that the disease is endemic in this country and occurs with greater frequency than published reports would indicate. The diagnosis of granuloma inguinale must be entertained in all chronic ulcerative lesions of the genital and perigenital regions; especially if the patient is a negro native of the Southern states or tropical countries. The intravenous administration of tartar emetic constitutes a specific treatment.

MICHAEL, Houston, Texas.

SULL 'ACARIASI DA GRANO (GRAIN-ITCH DERMATITIS). D. MAJOCCHI, Gior. ital. d. mal. ven. **61**:709 (Dec.) 1920.

The author describes several cases of a universal vesiculo-erythematous dermatitis. In all of the patients, as well as in their clothes and in samples of wheat and flour, Majocchi found the acarus tritici or pediculoides ventricuosus. Cases of this disease were recognized in Italy for the first time in 1908 by Ducrey. They appear in epidemic form. At present the infected dis-

tricts are the provinces of Romagna, Ravena, Forli, Ferrara, Modena and Bologna. The eruption is always erythematopapular in the beginning, rapidly developing into vesicular. The author describes the pure papular or acneiform variety, the urticarial and the hemorrhagic. Infection by common organisms produce the secondary or pyodermal forms. The general health remains unimpaired. The patients were quickly cured with Wilson's ointment.

PARDO-CASTELLO, Havana.

STIGMATA OF PREDISPOSITION TO BONE AND JOINT TUBERCULOSIS. W. C. RIVERS, Brit. J. Child. Dis. **202-204**:179 (Oct.-Dec.) 1920.

Continuing his article, which was begun in the previous issue of this journal (p. 148), the author reports, among other signs, the apparent relative frequency of the occurrence of abundant long silky lanugo hairs on the backs of tuberculous children. It seems equally frequent in boys and girls, having been found in 3 out of 130 boys (2.3 per cent.) and in 3 girls among 116. In a control of 181 normal schoolboys it was seen only once (0.5 per cent.), and then in a degree far less than in any of the tuberculous cases. It is thought to be an atavism. Among the conclusions emphasis is laid on the importance of the atavistic qualities, including ichthyosis and pigmentation, and it is urged that no tuberculous ichthyotic patient, unless of great intellectual parts, and no tuberculous mentally defective person should be allowed to reproduce.

PARKHURST, New York.

REPORT OF A CASE OF ANAPHYLAXIS FOLLOWING AN INTRADERMAL PROTEIN SENSITIZATION TEST. J. GERSTENBERGER and J. H. DAVIS, J. A. M. A. **76**:721 (March 12) 1921.

The patient was an infant, aged 12 months, who had a mild dry eczema of the face, chest and arms and a decided emphysema accompanied by wheezing and a somewhat labored respiration. An enlarged thymus was demonstrated by fluoroscopy. Cutaneous scratch tests proving negative, it was decided to try intradermal protein sensitization tests.

While egg yolk allergen and egg albumin were being injected, the child developed cyanosis and dyspnea of marked degree. Epinephrin was administered with relief of the symptoms. The next day urticarial wheals appeared. Two days later the tests were again performed, but with different proteins. No untoward effects occurred.

Three days after the second test, another was made. Only egg yolk allergen was injected. Within a few minutes the child became extremely cyanotic and dyspneic, and death would probably have occurred had not a large dose of epinephrin been promptly administered. At the site of injection of the protein a large wheal developed in each test that was followed by symptoms of anaphylactic shock.

MICHAEL, Houston, Texas.

ZUR SPEZIFISCHEN BEHANDLUNG DER TIEFEN TRICHOPHYTIE (SPECIFIC TREATMENT OF DEEP TRICHOPHYTOSIS). MAXIMILIAN STRASSBERG, Wien. klin. Wchnschr. **34**:60, 1921.

Patients with deep trichophytosis of the head have been variously treated with trichophytin, along the lines of tuberculin treatment. It has been found that injections which provoke chills and fever are the ones that produce the best results on the trichophytosis. Injections so graded that they do not pro-

duce reactions are not efficacious. It has also been found that injections of tuberculin that produce reactions can speedily cure trichophytosis, in other words, nonspecific therapy. In other cases milk injections produced good therapeutic results after a series of trichophyton injections had failed either therapeutically or to produce reactions on injections.

GOODMAN, New York.

TOPICAL APPLICATIONS OF RADIUM. H. H. BOWING, Am. J. Roentgenol. **7**:582 (Dec.) 1921.

The terms milligram hours, erythema dose and distance screening are defined as they are used at the Mayo Clinic.

In treating cancer of the breast with or without metastasis a thorough radiation is indicated before operation and radiation after operation as soon as convalescence permits. In recurrent carcinoma of the breast improvement has been noted in all cases. Deep roentgen-ray treatment is given in addition to radium applications. Round cell sarcoma responds readily to combined radium and roentgen-ray therapy. Melanotic sarcoma is hardly influenced by this kind of treatment. The simple type of tuberculous adenitis offers the best result. If suppuration is present, surgical measures may be necessary. Remissions were obtained by radium therapy in practically all cases of splenomyelogenous leukemia. Details of treatment are given.

MICHAEL, Houston, Texas.

QUELQUES MERITES COMPARES DE L'ARSENOBENZOL ET DU MERCURE (A COMPARISON OF THE MERITS OF ARSPHENAMIN AND MERCURY). SABOURAUD, Presse méd. **28**:533 (Aug. 4) 1920.

Interruption of treatment by military service has made it possible for Sabouraud to examine syphilitic patients who had been treated exclusively with either arsphenamin or mercury. Patients who had been subjected to a long course of mercury, especially in the form of gray oil, never showed a relapse to a positive Wassermann reaction. All cases in which it had become negative during the course of treatment with mercury remained so. On the other hand, patients inefficiently and exclusively treated with arsphenamin showed a greater degree of fixation at the time of reexamination than at the time when treatment was interrupted. Sabouraud emphasizes the fact that mercury still holds an important position in antisyphilitic therapy, especially in patients with an infection of some duration.

ZIMMERMANN, Baltimore.

ALEUKEMIC LEUKEMIA WITH UNUSUAL SKIN MANIFESTATIONS: REPORT OF CASE. M. A. BLANKENHORN and H. GOLDBLATT, J. A. M. A. **76**:583 (Feb. 26) 1921.

The patient presented a profuse, generalized eruption composed of various sized, purpuric, infiltrated patches in different stages of evolution and involution. The mouth and conjunctivae were involved. Subjective symptoms are not mentioned. There was a moderate general adenopathy and enlargement of the liver and spleen. Blood counts did not show the abnormal leukocytosis characteristic of lymphatic leukemia. Blood cultures were positive for *Staphylococcus albus*. The temperature ranged from 99 to 103 F., and there were other indications of a generalized infection.

Biopsy showed a dense infiltration of the corium with large and small lymphocytes and atypical endothelial cells. At necropsy, the report of which is given in detail, the features of lymphatic leukemia were observed.

MICHAEL, Houston, Texas.

DEUX CAS DE LEISHMANIOSE CUTANEE CONTRACTEE EN ESPAGNE ET EN FRANCE (TWO CASES OF ORIENTAL BOIL CONTRACTED IN SPAIN AND FRANCE). P. RAVAUT, Ann. de dermat. et syph. **1**:*29*, 1921.

Neither patient had been outside of France or Spain, but laborers from northern Africa had lived in their vicinity. The bites of flies or mosquitoes are blamed.

Although the Leishman bodies, intracellular and extracellular, were found in large numbers, neither case was clinically typical. The evolution was slow, and both patients responded favorably to several weekly injections of neo-arsphenamin with 0.3 gm. as a minimum dose. The second patient responded slowly, however, and the intravenous use of tartar emetic is proposed as a better measure.

This is the first reported case of contagion in France.

PARKHURST, New York.

THE TREATMENT OF NEUROSYPHILIS BY THE INTRASPINAL ROUTE WITH THE REPORT OF A CLINICAL STUDY OF A SERIES OF CASES TREATED FROM THE POINT OF VIEW OF INCREASED PERMEABILITY OF THE MENINGES. KEIDEL and MOORE, Johns Hopkins Hosp. Bull. **31**:404 (Nov.) 1920.

With the idea of increasing the effectiveness of treatment of neurosyphilis, the authors administered an intraspinal injection of mercurialized serum (Byrnes) and twenty-four hours later an intravenous injection of arsphenamin. In this way a maximum concentration of arsenic was obtained in the blood stream at the time of maximum meningeal irritation. Such treatments were given in courses usually of six treatments administered one each week, and each course was followed by ten to twelve weeks of administration of mercury by inunctions.

As judged by the treatment of twenty-five cases of neurosyphilis, this method did not yield as good results as the Swift-Ellis method. The authors conclude that the mode of action of intraspinal medication does not depend on increased permeability of the meninges, and that aseptic meningitis produced by intraspinal injection of irritants may prove an untoward, rather than a beneficial, factor in the treatment of neurosyphilis.

ZIMMERMANN, Baltimore.

TRANSMITTED CONGENITAL SYPHILIS. D. H. PATERSON, Brit. J. Child. Dis. **202-204**:197 (Oct.-Dec.) 1920.

A case is reported as another proof that a mother with congenital syphilis may transmit it to her child. The disease had been transmitted from the maternal grandmother to her daughter, who gave birth to a syphilitic child, the patient. This child, a boy aged 2½ years, was mentally deficient, and presented the characteristic facies of congenital syphilis. The Wassermann reaction was positive. A photograph of the mother is reproduced, showing a saddle nose and external strabismus. She showed an old interstitial keratitis

and her Wassermann reaction was +++. The boy's father and another baby aged 2 months both gave negative Wassermann reactions and were apparently nonsyphilitic. The maternal grandmother had died of tabes.

(Another case was recently reported by Bruusgaard [*Acta Dermat.-Vener.* **1**:1, 1920] in the ARCHIVES OF DERMATOLOGY AND SYHILOLOGY **2**:771 [Dec.] 1920.)

PARKHURST, New York.

JUVENILE TABES. C. ROSENHECK, J. A. M. A. **76**:572 (Feb. 26) 1921.

The author discusses the history and symptomatology of this condition and reports a typical case. In 40 per cent. of the reported cases the onset was characterized by visual difficulty. Next in frequency lancinating pains, bladder disturbances and gait defects were encountered. The average age of onset was 15 years; the youngest patient was 3 years of age.

Rosenheck's patient was a girl, aged 18 years, born of apparently healthy parents. Three years previously severe lancinating pains made their appearance, followed in two years by paresthesias and later by slight ataxia. In addition to markedly unequal and fixed pupils, there were: absent deep reflexes, positive blood and spinal fluid Wassermann reactions, increased globulin, 130 cells per cm., and a colloidal gold reading of 5544334555.

MICHAEL, Houston, Texas.

HEREDITARY HEMORRHAGIC TELANGIECTASIA WITH RECURRING (FAMILIAL) HEREDITARY EPISTAXIS. H. I. GOLDSTEIN, Arch. Int. Med. **27**:102 (Jan.) 1921.

The literature on this rare disease is thoroughly reviewed by the writer. Many cases are reported in which the condition was accompanied by telangiectasis without hemorrhages and vice versa. The lesions in hereditary cases are more pronounced and numerous toward middle life and are most commonly found on the face and fingers. There is no change from normal in clotting and bleeding time and no history of hemophilia. Many remedies are recommended for the bleeding, but treatment is not satisfactory. The usual methods of treating telangiectatic lesions are given. A report of the author's cases is also given in detail—eleven patients in one family.

JAMIESON, Detroit.

RADIUM AND NEVUS. ROBERT ABBE, Urol. & Cutan. Rev. **25**:65 (Feb.) 1921.

Abbe's long experience in the use of radium leads him "to deprecate the enthusiastic claims of many who are newly possessed of radium, that the treatment of a naevus constitutes one of the most successful fields of radium service." In portwine mark, restoration of the exact normal tint of the skin is not obtainable. In treating nevi with radium it is necessary to cause erythema, but not to blister. This dose is a good guide to treatment.

After the first dose an interval of six weeks should be allowed to observe the effect, and an additional six weeks before another treatment is given. Thus nevi are treated at intervals of three months for at least two years. It is essential in treating cavernous angioma that pressure sufficient to cause apposition of blood vessel walls is maintained throughout the exposure. In portwine marks the plaque should be moved about during the sitting or the end-result will be spotty.

Abbe has found ignipuncture an efficient method for destroying radium telangiectases. He uses a lady's hat pin heated to a cherry red in a flame and introduced at a black heat into the most prominent point of each little vein.

MICHAEL, Houston, Texas.

TROIS CAS DE CONTAGION SYPHILITIQUE AU PASSAGE (THREE CASES OF SYPHILITIC CONTAGION DURING BIRTH). S. LOMHOLT, Ann. de dermat. et syph. **1**:17, 1921.

The mothers had all acquired syphilis during the last months of pregnancy and had presented the first generalized eruption of the disease about the time of confinement, with lesions on the genitalia. Each infant developed multiple ulcerations of the scalp, which had been the presenting part, and the presence of *Spirochaeta pallida* was easily demonstrated. The regional lymph nodes were enlarged. No signs of congenital syphilis were present, and in one case the Wassermann reaction at first was negative.

PARKHURST, New York.

FAUT-IL TRAITER LA FEMME ENCEINTE D'UN SYPHILITIQUE (SHOULD ONE TREAT THE PREGNANT WIFE OF A SYPHILITIC)? CARLE, Ann. de dermat. et syph. **1**:23 1921..

The author has long held that such a woman should receive treatment only if a clinical and serologic examination shows that she is syphilitic. In his practice he has found this plan to be a good one, having used it extensively.

Only in certain cases is it thought advisable that the husband confess his disease to his wife, or that she be told by the physician, for this often produces domestic trouble. It is customary to examine her under some pretext, keeping her in ignorance of the real purpose in view.

If the woman be syphilitic, it is urged that the treatment be intensive.

PARKHURST, New York.

THE REACTIONS OF THE ARSINES. PRELIMINARY PAPER. CONDENSATION OF PRIMARY ARSINES WITH ALDEHYDES. ROGER ADAMS and CHARLES S. PALMER, J. Am. Chem. Soc.

In an attempt to discover some substance with a higher therapeutic value and more particularly with greater stability than arsphenamin, the authors have studied the condensation of alhehyds with phenylarsin. Addition products are formed between two molecules of aldehyd and one molecule of arsin. Up to the present time benzaldehyd and butyraldehyd have been condensed with phenylarsin, and it seems probable that this reaction may be extended to any aromatic or aliphatic arsins and aldehyds. The compounds are perfectly stable in cold water, 10 per cent. sodium hydroxid solution or dilute hydrochloric acid. The compounds already made are not soluble in water, but it is hoped to obtain certain derivatives in this series which will be soluble in water and capable of therapeutic testing.

SENEAR, Chicago.

TESTS FOR CHANGES IN THE PROTEIN CONTENT OF THE CEREBROSPINAL FLUID, BASED ON THE FLOCCULATION OF LIPOIDS. H. NOGUCHI, J. A. M. A. **76**:632 (March 6) 1921.

None of the present methods for determining pathologic changes in the protein content of the cerebrospinal fluid is without disadvantages. They are either unsatisfactory from the standpoint of technic or because of failure to differentiate the normal from the pathologic.

The proposed method is not altogether based on the direct precipitation of the proteins contained in the cerebrospinal fluid, but is due to a concomitant flocculation of certain lipoids which are present in the reagent. The reagent consists of two components: (1) an alcoholic extract of acetone-insoluble tissue lipoids, and (2) an acid-salts solution. Methods of preparation are given in detail. Comparative observations show that the test runs parallel with the butyric acid reaction. The test is simple, and the result can be read within ten minutes.

A subsequent article will describe its use in quantitative determinations of the protein content of the cerebrospinal fluid.

MICHAEL, Houston, Texas.

ETIOLOGY OF ACNE ROSACEA THROUGH A VISCERO-NEUROLOGIC MECHANISM. F. P. MILLER, Am. J. M. Sc. **161**: :120 (Jan.) 1921.

In this article the writer shows, in a rather complex statement which cannot well be abstracted, that the rosacea of this disease may be due to a mechanism of the nervous system through stimulation of the sensory division of the fifth cranial nerves, the stimulation arising from irritation which may be either from within or without the body. Activity of the psychic centers by repeatedly producing the phenomenon of blushing is also stated to be an etiologic factor in that this gradually produces chronically enlarged venous capillaries. The acne lesions proper he regards as mere secondary manifestations.

JAMIESON, Detroit.

A STUDY OF THE BEHAVIOR OF SYPHILITIC AND NORMAL SERA TOWARD CERTAIN COLLOIDAL SOLUTIONS. MASON, Johns Hopkins Hosp. Bull. **31**:234 (July) 1920.

The following reagents were used: (1) 0.3 c.c. of inactivated undiluted serum, (2) 0.4 c.c. of alcoholic extract of beef heart plus 0.2 per cent. of cholesterin, diluted 1:6 with physiologic saline, and (3) 0.6 c.c. 8 per cent. sodium chlorid solution. The mixture was incubated at 37 C. for from twelve to sixteen hours, and the presence or absence of flocculation determined. The results obtained by this method with 200 serums corresponded in 95 per cent. of the cases to those obtained with the Wassermann test of the same serums.

ZIMMERMANN, Baltimore.

BRIEF CONSIDERATIONS ON SURGICAL TUBERCULOSIS IN INFANTS. C. G. CUMSTON, Brit. J. Child. Dis. **202-204**:189 (Oct.-Dec.) 1920.

Among other manifestations, subcutaneous abscesses and subcutaneous gummas are considered. The author has found the abscesses to be of common occurrence in tuberculous infants, directly caused by the ordinary bacteria of suppuration having been fostered by a tuberculous soil. Usually multiple and disseminated over the body surface, these abscesses last for months. Sometimes they are limited to the scalp, the subungual, gluteal or malar regions.

The gummas are frequently encountered, scattered over the body or limited to the gluteal region or limbs. Although they do occur in infants from 6 months to 1 year of age, they are much more frequent after the first year of life.

PARKHURST, New York.

TREATMENT OF VASCULAR NEVI WITH RADIUM. D. W. MONTGOMERY and G. D. CULVER, Boston M. & S. J. **183**:412 (Sept. 30) 1920.

The authors report several cases of cavernous angioma in which excellent results were obtained by the use of radium. They give the technic of the applications in detail so that others may profit by their experience. They state that it is far better to err on the side of screening too much than too little. This precaution is particularly necessary when a cosmetic result is wished, as is so often the case in nevi. Nevus araneus is not amenable to radium treatment.

MICHAEL, Houston, Texas.

STUDIES IN THE VALUE OF WASSERMANN TESTS. I. FREQUENCY OF A POSITIVE WASSERMANN REACTION IN AN UNSELECTED MALE INDIAN POPULATION. K. R. K. IYENGAR, Indian J. M. Res. **7**:398 (Oct.) 1919.

The cases reported were taken from unselected, apparently healthy, male Indian population, coming for treatment to the Pasteur Institute. The cases dealt with in the article came from all classes of society, rich and poor, without any distinction to caste or religion. The age of the cases examined ranged from 20 to 60. Of the 400 cases examined, the reaction was found to be positive in eighty-eight cases or 22 per cent.

GUTIERREZ, Manila, P. I.

ANTIMONY IN LEPROSY. F. G. CAWSTON, Brit. M. J. **2**:855 (Dec. 4) 1920.

The author previously reported several cases of leprosy successfully treated with injections of antimony. In this article he reports two additional cases in which favorable results were obtained by giving a series of intramuscular injections with Oppenheimer's colloidal preparation of antimony (Oscal stibium). The dosage averaged from 2.5 cm. to 5 cm. given daily and then every other day.

OLIVER, Chicago.

ACNE VACCINE THERAPY. MARTIN F. ENGMAN, J. A. M. A. **76**:176 Jan. 15) 1921.

Engman describes the types of acne best suited for vaccine therapy, also the dosage used to secure the best results. The author states that in his opinion the failure to obtain proper therapeutic results in the use of this method has been due to the administration of too large doses or too frequent administration of the vaccine.

WAUGH, Chicago.

CASE FOR DIAGNOSIS. S. E. DORE, Proc. Roy. Soc. **14**:13 (Jan.) 1921.

A child aged 9 developed deep seated scars leaving vesicles on exposed parts of the body, produced, it was thought, by the sun's rays and heat. A tentative diagnosis of hydroa aestivale was offered and a quinin ointment prescribed with an idea of intercepting the sun's rays.

GUY, Pittsburgh.

THE PHENOMENON OF VERNES AS APPLIED TO THE SERODIAGNOSIS OF SYPHILIS. LEON H. CORNWALL and LOUIS S. ARONSON, J. A. M. A. **75**:1697 (Dec. 18) 1920.

The authors assert that a study of these syphilitic indexes constitutes a measure of importance in treatment. The specificity of the reaction is vouched

for by Vernes after an extensive application to a large number of patients suffering from various diseases, which application has been controlled by the clinical observations of Marie, Landouzy, Chatelin and others.

CASE OF POST-VACCINAL PSORIASIS. GEORGE PERNET, Proc. Roy. Soc. **14**:1 (Jan.) 1921.

Typical psoriasis developed in a 16 year old girl immediately following vaccination. Other members of the Society had seen psoriasis develop after vaccination or slight injury.

GUY, Pittsburgh.

A SUGGESTED NEW METHOD OF MEASURING X-RAY DOSAGE. C. E. S. PHILLIPS, Arch. Radiol. & Electroth. **15**:215 (Dec.) 1920.

The author is endeavoring to perfect a reliable means of accurately measuring roentgen-ray dosage. He hopes to develop an instrument that will register on a dial what is the actual or relative radiation intensity of a pencil of rays. The proposed scheme is based on the fact that a gas becomes a conductor of electricity when traversed by roentgen rays. Its essential feature consists in the use of a thermionic valve.

MICHAEL, Houston, Texas.

SIGNIFICANCE AND VALUE OF A POSITIVE WASSERMANN REACTION IN LEPROSY. K. R. K. IYENGAR, Indian J. M. Res. **7**:407, 1919.

Iyengar examined 100 cases of undoubted leprosy in which the ages of the patients ranged between 30 and 60. Of these 100 cases, thirty-four were of the nodular type; fifty-two of the anesthetic and fourteen of the mixed type. Positive reactions were obtained in seventeen, sixteen and eight cases, respectively, or 41 per cent.

The serums of twelve children born of leper parents was also examined. The ages of these ranged from 11 months to 15 years. All gave a negative reaction. They had not showed any signs of the disease.

GUTIERREZ, Manila, P. I.

CASE OF URTICARIA PIGMENTOSA WITH BULLOUS LESIONS. J. M. H. MACLEOD, Proc. Roy. Soc. **14**:17 (Feb.) 1921.

At the age of 3 months the patient developed an itching generalized, mixed macular and nodular eruption, new lesions appearing in crops at intervals since, the palms and soles only now being free of lesions. In addition to the usual lesions, there were present variously sized wheals, vesicles and bullae. The usual mast-cell infiltration was demonstrated in sections.

GUY, Pittsburgh.

KERATOSIS AND SKIN CANCER. Abstracted from the minutes of the meeting of the Section on Dermatology and Syphilis. Med. J. of Australia **2**: (Sept. 18) 1920.

The conclusion was reached at this meeting that these conditions were extremely common and that the incidence was greater in Australia in proportion to other cases than elsewhere. It was also pointed out that from 50 to

100 miles from the coast line the air was relatively devoid of moisture, and that certain types of people were predisposed to the condition.

GUTIERREZ, Manila, P. I.

A SHORT SILVER IMPREGNATION METHOD FOR THE DEMONSTRATION OF SPIROCHAETA PALLIDA IN TISSUE. S. R. HAYTHORN, J. A. M. A. **76**:725 (March 12) 1921.

A comparatively simple method is outlined which is said to give practically the same picture as that obtained by the Levaditi procedure. Only three days are required for the preparation of the tissue for study.

MICHAEL, Houston, Texas.

AN ANALYSIS OF OVER FIVE HUNDRED CASES OF GENITAL CHANCRES IN THE NATIVE MALE. H. P. HENNESY, Indian Med. Gaz. **55**:327 (Sept.) 1920.

The class of patients dealt with in this paper were of the coolie type, hence the lowest class. The patients with few exceptions were Malays or Indians. The age incidence is given in the following table; otherwise the article contains nothing of interest.

Under 20	20-30	30-40	Over 40
27	426	49	17

GUTIERREZ, Manila, P. I.

CASE OF EPIDERMOLYSIS WITH EPIDERMAL CYSTS. J. H. SEQUERIA, Proc. Roy. Soc. **14**:19 (Feb.) 1921.

A young man, aged 20, who had been incapacitated his entire life on account of epidermolysis bullosa, showed numerous atrophic scars, bullae and epidermal cysts.

GUY, Pittsburgh.

A CASE OF TROPICAL SORE CURED BY INTRAVENOUS INJECTION OF TARTAR EMETIC. T. D. BANA, Indian Med. Gaz. **55**:340, 1920.

The patient reported had nine boils. He had been under the care of various physicians and had been treated for syphilis. Bana gave him six intravenous injections of tartar emetic of ¾ grain each on February 12, 16, 19 and 23, and 1 grain on March 16 and 19. The patient made a progressive and uneventful recovery.

GUTIERREZ, Manila, P. I.

NOTES ON NOVO-ARSPHENAMIN RASH. MOHAN BOSE, Indian Med. Gaz. **55**:334, 1920.

The article contains nothing new to syphilographers.

GUTIERREZ, Manila, P. I.

AINHUM, A FAMILY DISEASE. K. M. B. SIMON, J. A. M. A. **76**:590 (Feb. 26) 1921.

The occurrence of this condition in a father and two sons is reported. No details are given.

MICHAEL, Houston, Texas.

THE FOURTH VENEREAL DISEASE, ULCERATION AND GANGRENOUS BALANOPOSTHITIS, WITH CASE REPORT. W. M. DONOVAN, Am. J. Med. Sc. **161**:267 (Feb.) 1921.

Report of a case, and a consideration of the known facts of the disease.

JAMIESON, Detroit.

SYPHILITIC RUPTURE OF A PAPILLARY MUSCLE OF THE HEART. SPALDING and VON GLAHN, Johns Hopkins Hosp. Bull. **32**:30, (Jan.) 1921.

This article consists of the report of a case of syphilitic aortitis and aortic insufficiency with rupture of one pillar of the posterior papillary muscle of the left ventricle and demonstration of *Spirochaeta pallida* in one segment of the ruptured muscle.

ZIMMERMANN, Baltimore.

Society Transactions

SOCIETY OF DERMATOLOGY AND SYPHILOLOGY, MADRID

Meeting Held Feb. 4, 1921

DR. AZÚA *in the Chair*

CASE FOR DIAGNOSIS. Presented by DR. FERNANDEZ DE LA PORTILLA.

Nine months ago this boy had a hard chancre, which left a typical scar in the internal side of the foreskin. He had been given a complete course of silver arsphenamin, two courses of mercuric benzoate and one and one-half courses of neo-arsphenamin; one month after the last course of treatment, a lesion appeared on the penis next to the site of the first chancre; in the lesion Dr. Arcaute found spirochetes. Clinically the sore presented specific features, but it is doubtful whether it was a chancre or an ulcerative syphilid. The patient had not had sexual intercourse since acquiring syphilis; therefore the second infection must have been caused by spirochetes, which had become saprophytes and which had remained near the site of the first infection. They had evidently increased virulence and had caused a new chancre to develop. This case was interesting as the patient was treated with silver arsphenamin.

DISCUSSION

DR. AZÚA said he thought the condition was a nonprimary specific lesion.

DR. SÁNCHEZ COVISA said he thought the patient had secondary papules of chancrous form recurring from the previous infection.

DR. SAINZ DE AJA had seen patients in whom the lesion was not so infiltrated. He thought the condition was a recurrence of the previous secondary syphilis; to assume that it was a secondary infection from the patient himself was misleading and complicated matters.

DIPHTHEROID HARD CHANCRE OF THE TONGUE. DR. CUBERO.

This interesting case was presented for diagnosis.

DR. BARRIO DE MEDINA said that from the information furnished by the patient he concluded that the lesion had been cauterized with copper sulphate two and three times a day for eight days. Therefore the infiltration was not significant, especially if considered with the fact that the submaxillary infarcts were not very plain. If Dr. Cubero had not found spirochetes the diagnosis is doubtful.

EPITHELIOMA AND RADIUM. DR. SAINZ DE AJA.

The patient, a woman with epithelioma of the back of the hand, had been presented at a previous session. She refused to consent to an operation and double radiations had been used in two twenty-four-hour cycles, each with

1 mm. of aluminum. There had been no improvement. This confirms the fact that epitheliomas of the hands present a far more serious prognosis than other epitheliomas.

For comparison, another patient was presented with pearly epithelioma of the lower right eyelid accompanied by conjunctival involvement, both ulcerated and infiltrated, cured in a fifteen-hour session with 1 mm. of aluminum; this was a great success especially in view of the marked palpebral infiltration and the extensive conjunctival involvement.

Another patient with epithelioma originating on a scar made by the roentgen-rays on a tuberculous lupus was receiving treatment. All these patients should receive surgical treatment from the beginning.

TREATMENT OF VARICOSE VEINS BY SICARD'S METHOD.

Drs. Covisa and Sanz de Grado.

As a result of the obliterating action of luargol and other arsphenamin preparations in intravenous injections in the treatment of syphilis, Sicard decided to apply this method to the treatment of varicose veins. As sodium is responsible for their thrombosing action, he employed for the intravenous treatment 10 per cent. sodium carbonate solutions in 10 to 20 c.c. injections. He treated in this way many patients in none of whom emboli occurred. He was able to cure varicose veins and ulcers with a few injections. The improvement was therefore immediate. Several patients had been treated in this way. Two of them were cured and the others remained under treatment with a favorable prognosis. Only local by-effects were noted when some drops entered perivenous tissue and necrotic foci were formed which remained a considerable time. Treatment was begun with doses of 2 and 3 c.c. of the 10 per cent. solution. More recently 5 c.c. were injected and the amount was increased 2 or 3 c.c. each time until 12 or 14 c.c. were reached. As a rule, the injections were given every other day or twice a week, but they could be applied every day without any discomfort when the varicose dilatations were numerous.

PRURIGO. Dr. Sainz de Aja.

A 15-year-old girl, since she was 7 years old, had had pruriginous papular infiltrations which disappear spontaneously and reappeared leaving some discoloration. These lesions did not affect the flexor surfaces and showed a tendency to form groups; the masses were very small. The lesions were to be treated with pilocarpin.

VERRUCA PLANA JUVENILIS. Dr. Barrio de Medina.

The patient, a girl, had had for several years a number of flat warts on the face and almost covering the dorsal surface of both hands. Dr. de Medina intended to treat her with neo-arsphenamin.

Dr. Covisa said he did not believe neo-arsphenamin would cure the warts. He advised curettage, iodin, etc.

Dr. Barrio de Medina said he was using this treatment only to confirm or deny the cures reported with arsenic.

SYPHILIS AND SUPRARENALS. Drs. Bejarano and Covisa.

In textbooks there will be found descriptions of the late lesions caused by syphilis of the suprarenals, thus originating several well-known syndromes.

On the other hand, the functional changes caused by this infection in the suprarenals are usually overlooked. In our opinion, these changes should be blamed in the majority of cases for two symptoms often seen in syphilitic patients: asthenia and skin spots. For a long time it has been known that asthenia is a practically universal sign of syphilis which appears frequently toward the end of the secondary stage, either alone or accompanied by other secondary manifestations. It has been proved that asthenia is often accompanied by pigmentary changes. Most of these patients have, as has been observed, a lowered arterial tension, a fact of great importance when all these symptoms are traced to a decreased function of the suprarenals caused by the infection. This question is interesting not only theoretically but practically, since patients with pigmentary syphilis exhibit, as demonstrated by Ravaut, changes in the cerebrospinal fluid which are remarkable. It is probable that the same thing may happen in patients with asthenia, in which case the treatment should be intensified. These changes could be explained, as suggested by Baliña, by the close relation between the cortical substance of the suprarenals and the sympathetic nervous system and of the latter with the cerebrospinal nervous system. These conclusions may be made:

1. Syphilis often causes a change in the suprarenals, tending to reduce their activity.

2. Drs. Bejarano and Covisa believe that such symptoms as asthenia and pigmentation, frequently seen in syphilitic patients, may be attributed to this disease.

3. In these cases, besides vigorous specific treatment, the administration of epinephrin apparently is indicated, which at least in Baliña's cases, has given good results.

DR. BARRIO DE MEDINA, Secretary.

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, Feb. 16, 1921

CLARENCE A. BAER, M.D., *Presiding*

MUCOUS CYSTS. Presented by DR. STILLIANS.

The patient was a married woman, aged 30 years. Cysts had formed on the inside of the lower lip for several years, slowly becoming more frequent. The patient believed that grapefruit, eaten frequently, improved the condition. The cysts were painful, especially so just after they formed. She had had occasional attacks of mucous colitis and had peritoneal adhesions as the result of a laparotomy for abscess.

On the inner surface of the lower lip several mucous cysts could be seen, separated by macerated epithelium. The roof of one such cyst, examined microscopically, showed a horny thickening at the center.

DISCUSSION

DR. PUSEY thought the case was unusual and interesting on account of the history of the development of mucous cysts with acute inflammation of the lips. He could not see any cysts at this time, but the patient had an exfoliative inflammation of the mucous surfaces of the mouth.

Dr. Foerster asked whether there had been any lesions on the palate at any time.

Dr. Senear suggested the diagnosis of cheilitis glandularis apostematosa.

Dr. Stillians considered the case interesting because he never had seen mucous cysts so small or multiple. It was impossible to get a probe in any distance, but there seemed to be a shallow depression forming the bottom of the cyst, and when the top of a cyst was placed on a slide he could determine thickening of the horny layer in the center of the lesion. The patient stated that she had noticed quite large, hard nodules on taking the tops of the cysts off, but was unable to get good ones for demonstration. Dr. Stillians was not sure whether the exfoliation was due to the cysts or to some applications of silver nitrate. No silver nitrate had been applied for a week, but the exfoliation appeared to be about the same. There was no oozing from the follicles at any time during examination, and the patient denied biting the lip. No lesions were present on the upper lip, but there were some on the cheek. The patient asserted that they were painful when they appeared, and she always opened them.

ACTINOMYCOSIS. Presented by Drs. Ormsby and Mitchell.

A farmer, aged 47 years, had had the disease for one year. The first change noted was neuralgia and soreness of the teeth on the left side of the upper maxilla. This was followed by swelling of the face in the contiguous area. At a later date, when the swelling became more pronounced, softening and rupture occurred, and more or less discharge had persisted since that time.

When the patient was first seen by Dr. Ormsby, in August, 1920, there was an egg-sized, boardy swelling, involving the entire thickness of the cheek and interfering with the movement of the jaw. Examination of the purulent discharge from a sinus revealed the ray fungus. During the six months' treatment some improvement had occurred through administration of arsphenamin, potassium iodid and roentgen therapy, but the response to treatment in this case had been much less marked than in any of several others similarly treated.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

A Canadian man, aged 25 years, had had attacks of itching dermatitis, beginning in the groin, for three years. The present attack had persisted since October, 1920.

At the time of presentation there was an eczematoid dermatitis of the groins, the inner side of the thighs, the chest and abdomen. Beyond the border of the principal eruption were round, crusted, sharply defined macules, ranging in size to 1.5 cm., and a number of small pustules.

SEBORRHEIC DERMATITIS. Presented by Dr. Senear.

A boy, aged 13 years, presented an eruption which began with a patch in the inguinal region, and then spread rapidly over the trunk, ten years ago. The disorder had cleared up somewhat at times, but had persisted to a considerable degree ever since. Itching was severe at the beginning of the trouble, but had become less intense; the patient stated, however, that the eruption "hurt." The boy also had a superimposed molluscum contagiosum two months ago.

DISCUSSION

Dr. Ormsby thought the diagnosis in the case shown by Dr. Stillians would lie between ringworm infection and seborrheic dermatitis, and believed ringworm could be ruled out on account of the rapid extension of the disorder over such an extensive surface. The amount of scaling and the crusting he considered typical of seborrheic dermatitis, and believed this diagnosis would stand first in this case.

The case shown by Dr. Senear he thought was similar, and he believed that seborrheic dermatitis and dermatitis herpetiformis would both have to be considered. The condition of the nails was probably onychia induced by pyogenic infection. There was much pus infection in the case, and the condition could be due to this. He did not feel positive about the diagnosis.

Dr. Stillians said he had searched for fungi in his case but was unable to find any. There were pustules, in the border particularly, but he was most interested in the flat lesions with the sharply defined crusts.

Dr. Ormsby believed all the members were familiar with the clinical picture termed seborrheic dermatitis, particularly as seen behind the ears, on the neck and forehead, apparently induced by the micro-organism that induces ordinary impetigo. Whether true seborrheic dermatitis is caused by a single micro-organism is difficult to determine, but a clinical picture similar to it is not infrequently the result of different microorganisms.

Dr. Oliver stated that the boy had had several attacks of the same condition in the groin, and in childhood the face and scalp had been involved several times. He thought this would help to confirm the diagnosis of seborrheic dermatitis.

Dr. Senear was of the opinion that Dr. Stillians' case was one of seborrheic dermatitis. Several months ago, when he first saw the boy whom he presented, the picture was somewhat different from that presented at this time. He then told the father that the diagnosis lay between seborrheic dermatitis and psoriasis, rather favoring psoriasis. The first attack cleared up rapidly under soothing treatment, with a little eruption persisting since then. At the time of the acute throat infection, about two weeks before presentation, there was an exacerbation of the disorder. Dermatitis herpetiformis had been suggested in the differential diagnosis not so much because of the clinical picture as on account of the statement of the boy that it hurt rather than itched.

There was multiformity and some pigmentation, some itching and a history of recurrence, but Dr. Senear was unable to make out any definite grouping in the eruption. He believed it was a case of seborrheic dermatitis, with the pustules present due to secondary infection, as Dr. Ormsby had suggested.

Dr. Baer asked what Dr. Senear thought of the diagnosis of psoriasis for the nail condition, and wished to know how long it had been present.

Dr. Senear, replying to Dr. Baer, said that psoriasis would be a strong possibility if he inclined to that diagnosis for the body, but thought it was not necessary to invoke a separate condition to explain the nail changes. That crusts, rather than scales, covered the body pointed more to seborrheic dermatitis than to psoriasis. The nails had been in the present condition for four or five years, possibly more.

SARCOID. Presented by Drs. Ormsby and Mitchell.

This patient was a woman who was first shown in January, 1919, and was presented at this time to show that the disease had progressed in spite of all

treatment. Histologic examination showed the deep type of sarcoid. Glandular involvement had recently developed underneath the chin, and nodules were present on the dorsal surface of both feet. She had received arsenic and arsphenamin, with little, if any, result.

MORPHEA. Presented by Drs. Ormsby and Mitchell.

The patient was a girl, aged 16 years, who presented lesions in a bandlike form extending over the upper two thirds of the forearm to the shoulder. The disorder was said to be of three months' duration. In the area on the forearm were several well-defined yellowish plaques varying in size from that of a five-cent piece to that of a silver quarter. Their peripheral zone was lilac tinted. On the arm the involved area was less indurated, showed none of the waxy plaques, and was hyperpigmented. Some paresthesia was present. The Wassermann reaction was negative.

In addition to the condition described, many atrophic white lines were present over both upper arms and in other situations on the cutaneous surface. The patient weighed 185 pounds.

DISCUSSION

Dr. Ormsby stated that they had not studied the case particularly, and wished to know whether the gentlemen considered it an example of scleroderma or morphea. Clinically, there is much difference between the two disorders. These bandlike cases with light colored, ivory-like indurations surrounded with a purplish or violet border, he believed were morphea, and they are very different from scleroderma. The latter disorder begins with solid edema or atrophy and occupies a much larger surface. In his opinion this was a bandlike morphea.

Dr. Pusey thought it was a case of morphea, and agreed that there is at least a clinical difference between morphea and diffuse scleroderma.

Dr. Stillians agreed with the diagnosis, and called attention to the fact that many of the patches ran together.

LICHEN PLANUS. Presented by Dr. Stillians.

An American woman, aged 53 years, had had an itching eruption since July, 1920. It began as water blisters over the whole body and had persisted as a dry rash since that time in spite of various methods of treatment. Itching was a prominent symptom.

There were widespread lesions of lichen planus with circinate lesions on the lumbar region, and on each shoulder was a patch of acuminate papules capped by horny scales.

DISCUSSION

Dr. Stillians stated that he had shown the patient on account of the patches of acuminate papules in a case of lichen planus.

LUPUS ERYTHEMATOSUS. Presented by Dr. Waugh.

A man, aged 36 years, had had the disorder for three years. There was a reddened, scaling patch on the dorsal surface of each hand with considerable atrophic scarring. The areas involved had always been dry, and moderate itching and burning were present at times. The lower lip and lobes of the ears were moderately involved. A few lesions were present on the feet, similar to those on the hands.

DISCUSSION

Dr. Senear said he saw this patient in August, 1918. At that time there was a generalized erythema of the face which would have been difficult to diagnose as a lupus erythematosus had it not been for the lesions on the hands and soles. The lesions at that time were bullous, and it had been suggested to the patient that the lesions had developed on a pernio basis. The eruption on the face seemed to begin after the patient was exposed to cold wind. He was at that time a driver on a coal wagon and might have been mildly frost bitten without realizing it. The disorder had cleared up readily, for lupus erythematosus, in three months, during which time he took quinin and used a calamin lotion and an iodin-benzol solution. As was to be expected, the result was not permanent.

Dr. Pusey thought the lesion on the left hand was certainly lupus erythematosus, but did not recall having seen lesions on the hand without any on the face in any previous case.

LICHEN SPINULOSUS AND SYMMETRICAL KERATODERMA. Presented by Dr. Senear.

A married woman, aged 29 years, for the past three and a half years had had hyperkeratoses of the palms and soles. About four months before presentation she noticed that her entire body was covered with small elevations, like "goose flesh." There was no history of the administration of arsenic and no similar cases in the family. The basal metabolism rate was 104+.

DISCUSSION

Dr. Stillians thought it was an interesting case, and expressed his pleasure at seeing the patient.

Dr. Pusey agreed with the diagnosis of an acquired hyperkeratosis.

Dr. Senear said that in view of the interest in the endocrinous factors he had a basal metabolism test made in this case and received a report that it was 104+, and was told that this indicated no thyroid involvement.

TABES DORSALIS ASSOCIATED WITH SKIN LESIONS OF TERTIARY SYPHILIS. Presented by Dr. Beeson.

A man, 57 years of age, gave a history of chancre twenty-two years ago. He did not notice any eruption or other trouble afterward. He took pills and a salty solution (probably potassium iodid) for about six months, and was then given permission to marry. About three years ago he began to have severe pains in his legs, beginning at the foot and shooting up to the trunk. About one year ago he began treatment for pulmonary tuberculosis under the care of Dr. O. W. McMichael. Steady improvement followed the use of tuberculin. The serpiginous syphilids appeared about six months ago, below the left scapula. They healed under specific medication.

Both knee jerks and Achilles' reflexes were absent and the patient was ataxic. There was no disturbance of urination, but bilateral Argyll Robertson pupils were present. An examination of the eyegrounds by Dr. Otto Wipper showed nothing abnormal. The vision was good. The blood gave a ++++ Wassermann reaction.

DISCUSSION

DR. PUSEY said that in his experience this was a rare combination. A number of years ago he had presented a similar case before the Chicago Neurological Society, and not one present at the meeting had seen the combination before.

DR. ORMSBY stated that a number of years ago there was a case at the Cook County Hospital in which tabes and the gummatous syphiloderm were simultaneously present. That was the only other case he remembered.

DR. PUSEY thought this was probably the same he showed to the Chicago Neurological Society.

DR. SENEAR thought this was an important point to establish since, in a paper just published by Dr. Wile, it was shown that skin lesions in connection with syphilis of the central nervous system were common rather than rare. If that is true, our teaching must be revised to cover this point. It was interesting to have an expression of opinion of the experience of others.

DR. MITCHELL said that there had been much discussion recently concerning the duality of syphilitic virus. Sicard contends that duality does not exist, whereas Marie and Levaditi insist that it does. The arguments have been gone into in extenso on both sides. It has long been observed that cutaneous lesions rarely occur in association with infection of the central nervous system. This is due, according to the duality theory, to the existence of two strains of spirochetes—a dermatropic and a neurotropic strain. The former, according to Milian, is an ulcerating strain, whereas the latter is a sclerosing strain. For this reason leukoplakia, which is a sclerotic process similar to the lesions of the central nervous system, is frequently observed in patients with syphilis of the central nervous system. Sicard contends that a neurotropic strain which does not produce cutaneous lesions would soon die out because of its inability to be transmitted from one person to another. Since the appearance of the articles by Sicard and others, a number of cases similar to the one shown have been reported in the French literature. Dr. Mitchell was interested in the subject, and desired to hear whether other members of the society had observed leukoplakias associated with tabes and paresis.

DR. FOERSTER said that Dr. Hirschl of the Krafft-Ebing clinic in Vienna maintained twenty years ago that neurosyphilis and syphilis of the skin do not occur together. Dr. Foerster recalled few instances of such association, although he had been on the watch for it during the past twenty years. Recently E. Hoffmann tried to show that the skin possesses a peculiar protective function for the internal organs in scarlet fever and other exanthems, as well as in syphilis, and that well-marked skin lesions in syphilis may indicate that the skin has exercised this function and served as a barrier to invasion of the central nervous system.

DR. MITCHELL called attention to the fact that Marie and Levaditi had found experimentally that the neurotropic strain in the rabbit would protect against the dermatropic but not vice versa. Others had not been able to prove this. Marie and Levaditi admit that this was not true in human syphilis.

DR. OLIVER said he had a patient under treatment who came to him with a marked leukoplakia, whose husband had advanced tabes. The woman had never had any symptoms of syphilis except the leukoplakia, which cleared up under antisyphilitic treatment.

DR. BEESON thought Fournier was the first to call attention to this combination, although Virchow had earlier performed a necropsy on a case of tabes with a muscle gumma.

In addition to the case mentioned by Dr. Pusey and Dr. Ormsby, Dr. Wile had shown a patient with gumma of the testes and tabes at the University of Michigan. Such cases seem relatively rare, but may be more common than is believed. He thought that probably some of them are not recognized. There have been about seventy-five cases reported, most of them in France.

Dr. Pusey did not accept the explanation that the reason tabes and syphilis were not seen together was because they were not recognized, for dermatologists recognize ordinary gummas on the skin, and certainly every dermatologist can recognize well developed tabes.

Dr. Foerster said that he had seen abortive herpes zoster very early in tabes four or five times.

Dr. Beeson said this patient had been treated for pulmonary tuberculosis for about a year and improved markedly on tuberculin. That condition appeared before the syphilitic lesions were seen, and the patient was referred to him from the clinic for tuberculosis.

Dr. Mitchell stated that Fournier thought that cephalic chancres were more likely to result in syphilis of the nervous system, but it has been convincingly demonstrated that there is no greater tendency in these cases toward syphilis of the nervous system than in others.

DYSTROPHY OF THE NAILS. Presented by Dr. Senear.

A man, aged 28 years, whose disorder had been present for many years, had been treated in a number of dispensaries with various local measures, and had taken Fowler's solution without improvement. Repeated examinations for fungi had been negative, and there was no history of dermatoses.

Recently, on the advice of a relative, he had been taking a proprietary sarsaparilla tonic which contained potassium iodid, and improvement had been rapid. There was no history of syphilis, and the Wassermann reaction was negative.

DISCUSSION

Dr. Pusey asked whether Dr. Senear thought the therapy had helped or whether the condition improved spontaneously. He could record many failures under potassium iodid in such conditions of the nails.

Dr. Senear said that the condition improved soon after the man began taking potassium iodid. He had received no drugs internally, except Fowler's solution. It might be a mere coincidence, but it seemed probable that the potassium iodid had affected the process in some way, although he did not know how.

ALOPECIA AREATA. Presented by Dr. Beeson.

A boy, aged 14, with an extensive alopecia areata, also presented an ogilvate palate, two abnormally placed lower lateral incisors, which were posterior to the other teeth. He was microcephalic and subnormal mentally, but no characteristic evidence of syphilis could be discovered. The Wassermann reaction was negative.

DISCUSSION

Dr. Mitchell said that Leredde had recently contended that itching dermatoses, particularly lichen chronica simplex, were of syphilitic origin, and it

was interesting that this patient who had microcephaly, a highly arched palate, alopecia areata and marked dental deformities had also lichen chronica simplex on the nucha, which in his experience was rare in that location in the male.

DR. BAER said, as he recalled it many years ago as a student in Paris, most of the cases had lichen chronica simplex.

DR. PUSEY asked whether any one had thought there was any evidence that the boy's congenital defects were syphilitic. He could see none.

DR. BEESON replied that he had been unable to discover any syphilitic history.

PARAPSORIASIS. Presented by DR. STILLIANS.

A married woman, aged 28 years, had been well until the summer of 1917, when she developed a genital sore. One month later red spots appeared on her neck; these gradually faded away, but reappeared on the arms and chest, where they had persisted since that time, with varying severity. The patient stated that the condition improved on tanning, and following an attack of furunculosis.

Examination revealed many pale pink to red macules covered by a wrinkled, horny layer or by frank scales. Some, denuded of scales, were bright red with a thin, epidermal layer. The patient had received arsenic internally and hypodermically without effect.

DISCUSSION

DR. PUSEY thought it was a case of guttate parapsoriasis.

DR. FOERSTER had presented a patient before this Society with the same type of lesions about three or four years ago. The man recovered completely during service at the front in Italy, without medication, and ascribed his relief to frequent bathing in the rivers and lakes. Dr. Foerster called attention to reports from Vienna where they had recently been giving from twenty to thirty injections of pilocarpin to patients with parapsoriasis with satisfactory results.

DR. STILLIANS agreed with the diagnosis of parapsoriasis, but said the patient had been bothered a good deal on account of a diagnosis of syphilis.

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, March 15, 1921

ARTHUR W. STILLIANS, M.D., *President*

A CASE FOR DIAGNOSIS. Presented by DR. STILLIANS.

An American woman, aged 49 years, complained that her tongue felt as though it had been scraped. This sensation was first noticed late in December, 1920, and was present at first in the left side only, but for the past several weeks had been present in the right side also. Red spots, which lasted for only a few hours, appeared and reappeared on the inside of the cheeks, and were accompanied by a feeling of heat. The pain in the tongue was almost constant, and at times shooting pains were added; the discomfort was not increased by eating, and was said to be decreased slightly by talking.

An alveolar abscess was cleaned up seven weeks ago, several bad teeth were removed and a tonsillectomy was performed four weeks ago. The red blood count was 3,160,000; hemoglobin, 55 per cent.; color index, 86; poikilocytosis, marked; white blood count, 13,700, with an increase of neutrophils. Marked intestinal intoxication was present. On the right border of the tip and at the posterior part of the left border pronounced reddening of the tongue could be seen, and there were a number of red macules, not sharply defined, on the inside of the cheeks, lower lip and anterior pillar of the fauces.

DISCUSSION

DR. PUSEY said that he saw on the buccal mucous membrane little areas of erythema; not definite patches, but long, crescentric lesions. The patient did not have Moeller's glossitis. She might have subsiding lesions or erythema multiforme, but one must always suspect pemphigus when he finds lesions like these in the mouth that cannot be explained. He thought there were inconsistencies about the case, and did not understand how any of the spots he saw could be painful.

DR. LIEBERTHAL asked how long the condition had been present and whether there had been any free intervals. He thought there was no evidence of pemphigus and suggested herpes as a diagnosis.

DR. STILLIANS, replying to Dr. Lieberthal, said the trouble had been present since Christmas, and there had been no free intervals. The patient complained a good deal of spontaneous pain, which was relieved by talking. He did not think the case was sufficiently severe to diagnose as Moeller's glossitis, and the lesions were not typical of that disorder. The patient had stated that she never had any tags of epithelium around the red spots, and that the tongue was painful before any red spots developed. The etiology was supposed to be the alveolar abscess which had occurred several weeks before the onset of pain in the tongue.

DR. SENEAR did not think that the condition was Moeller's glossitis. He thought the lesions were all located on the tongue and mucous membrane in locations in which the tissues might have been bitten, and since the patient, said to be neurotic, stated that the pain preceded the lesions, he thought it possible that the entire process might be traumatic.

DR. BEESON thought the condition was traumatic or gastro-intestinal.

DR. MCEWEN said he had always been impressed with the fact that certain tongue conditions, which seem to be permanently painful, show little evidence of abnormality as far as appearances go. He believed that if the patient were biting her lips or tongue there would be more visible evidence of traumatization.

DR. PUSEY was inclined to believe that the exfoliation in the mouth was associated with gastro-intestinal disturbance. He was impressed with Dr. Lieberthal's idea. It was not a frank aphthous stomatitis, but possibly an abortive herpes that did not become well developed vesicles. He did not think the lesions were traumatic because they were present in spots in which the patient could not produce them by biting.

A CASE FOR DIAGNOSIS. Presented by DR. STILLIANS.

An American girl, aged 8 years, in the spring of 1916 had had sore throat and fever for one day, and a few days later her hair began falling. Since that time she had had lobar pneumonia and bronchopneumonia, and the hair

had fallen after each illness. It had fallen at other times when exposed only to chilling of the head or when the head perspired, which it frequently did, and the hair recently fell out following a severe coryza.

The blood count was practically normal; the urine contained indican, and albumin was present for a time during the coryza. Basal metabolism was reported —6.

A fringe of hair about 2 inches long was present about the border of the scalp; the rest of the scalp was covered by very short new hair. Specimens of the recently lost hairs showed swelling in the upper follicular portion.

DISCUSSION

DR. OLIVER thought it might be a case of alopecia areata that did not involve the eyebrows and lashes.

DR. LIEBERTHAL thought it was a recurrent toxic alopecia, as the growth of the hair was not interrupted. He suggested putting the child on thyroid extract.

DR. PUSEY thought alopecia areata could be ruled out. The alopecia was not in patches, but left a regular fringe about the border of the scalp. It was not alopecia totalis, nor a diffuse alopecia because the diffuse alopecias are universal in the areas involved. He agreed with Dr. Lieberthal that it was an extraordinary example of toxic alopecia. He did not see evidence of the endocrin disturbance, but believed the child's hair was extremely sensitive to toxic conditions. In his opinion, it was a case of ordinary toxic alopecia greatly exaggerated.

DR. STILLIANS said that the hairs he examined were swollen in the upper follicular portion tapering to normal size above and to a point below. There was no abnormality of the skin. He could not account for the eyebrows and lashes not being involved. He had thought of alopecia areata on account of the long tag that had grown out on one side when the patient was first seen, but now considered that diagnosis almost impossible, and agreed with Dr. Lieberthal's diagnosis of toxic alopecia. The patient had improved, but her hair had never been normal since the age of 4 years.

LYMPHANGIOMA. Presented by DR. STILLIANS.

An American woman, aged 56 years, presented a skin deformity which had been present for more than ten years, but which was not present during girlhood. In front of the right ear there was a soft, flat-topped bulla which was yellowish under the diascope, brown at other times; it was oval, 1.5 by 1 cm. in size. No subjective symptoms were present.

DISCUSSION

DR. PUSEY thought the growth was a soft, jelly-like epithelioma, and believed it should be scraped off and examined. As to treatment, the base could be cauterized with zinc chlorid and radium applied. He thought this would be the last of the growth.

DR. MCEWEN was reminded of a patient whom he had shown the Society several years ago with a similar lesion on the bridge of the nose. Roentgen therapy was used unsuccessfully and radium was tried, with partial success, after which the patient passed into other hands. He had seen him recently and found that he had been treated with radium extensively; the lesion was still showing some activity.

DR. LIEBERTHAL asked why carbon dioxid snow could not be used successfully.

DR. PUSEY said carbon dioxid snow should not be used in carcinoma, as it is not sufficiently destructive.

DR. STILLIANS said he had not thought of an epithelioma but now realized that the lesion was much too dark for a lymphangioma; he would investigate the case further.

LUPUS ERYTHEMATOSUS. Presented by DR. STILLIANS.

An American woman, aged 43 years, presented an eruption which had been present on her face for two years and on her back for one year. Radiotherapy had failed to give relief, and she had afterward been treated with caustic paste at a sanatorium in Missouri.

On each cheek was a large, dense, bright red scar within and beyond which there were a few recurrent lesions of lupus erythematosus. There were no signs of tuberculous lesions elsewhere, except a relative lymphocytosis and leukopenia. The small lesion on the back had been excised for study.

DISCUSSION

DR. MCEWEN asked what treatment the patient had received and whether the scars were supposed to be due to the treatment.

DR. STILLIANS stated that someone had used a caustic paste on the lesions, causing great pain with prompt recurrence of the lesions as soon as the parts healed.

DR. PUSEY said he had seen much greater scarring from the excessive use of carbon dioxid snow.

DERMATITIS NODULARIS NECROTICA. Presented by DR. STILLIANS and DR. OLIVER.

The patient was a white man, aged 43 years, a laborer by occupation. He was first admitted to the Cook County Hospital in June, 1919, at which time the skin eruption had been present for seven years. The lesions began on his legs, later becoming generalized so that at the time of admission they were present on the head, trunk, back and extremities. They varied in size from that of a pea to that of a quarter, a few being even larger. They were discrete, oval or circular in shape, and some of the older ones were covered with fine scales. New lesions were indurated, copper colored papules which itched when they first came out; the centers gradually became necrotic and an ulcer formed covered with a thick black crust. On healing thin scars remained.

When the patient was first admitted, he was highly toxic and suffered from marked systemic symptoms. One notation on his chart, made June 17, 1919, stated: "Patient's mind seems cloudy; temperature 103 F.; pulse good; dyspneic but no lung findings. Condition is serious."

Culture from the pus under the crusts showed a pure staphylococcus growth. A vaccine was made and administered subcutaneously. The Wassermann reaction was negative; white blood count 8,000; the urine was negative. The patient gradually improved and was discharged, July 26, 1919.

On March 1, 1921, he returned to the Cook County Hospital with a recurrence which was not nearly so severe as the former attack. The lesions were of the same type, and the scars from the previous attack were present, par-

ticularly on the lower limbs. Cultures again showed staphylococcus albus; the temperature was normal; the white blood count was 9,700—60 per cent. lymphocytes. Physical examination and a roentgenogram of the lungs were negative. The diagnosis of dermatitis papillaris necrotica had been made by the late Dr. Frederick Harris.

DISCUSSION

DR. SENEAR thought the diagnosis of dermatitis nodularis necrotica was proper by exclusion, although he had never seen a case of this disease before. He thought it did not belong to the leukemias, as there would probably have been more change in the general condition during the years which the disorder had been present.

DR. ZEISLER thought it was a nodular dermatitis with necrosis, and considered it one of the most extraordinary cases he had seen. The report of two cases had been published in the *Iconographia Dermatologica*, one of them in a child with lesions on the buttocks, which he thought no one would hesitate to call a papulonecrotic tuberculid. The other patient had necrotic lesions on the legs, and foci of tuberculosis were demonstrated in the lungs. Dr. Zeisler had thought of some of the leukemias or pseudoleukemias in connection with the present case, and believed this man might develop such a disorder.

DR. MCEWEN thought the credit for the diagnosis in this case belonged to the late Dr. Harris, who had charge of the man during his first stay in the hospital. At that time the patient was in a bad condition from drink, exposure and filth, and it was believed at first that the lesions were the result of these factors. It was considered one of the most remarkable cases ever seen in the Cook County Hospital.

DR. LIEBERTHAL believed the possibility of tuberculosis should not be left out of consideration. The lesions on the hands looked much like a papulonecrotic tuberculid, and the vaccination-like scars would also suggest this disease. He hoped Dr. Stillians would report the microscopic findings.

DR. PUSEY said the case was practically a replica, although more intense, of a case of dermatitis nodularis necrotica in a patient that Dr. Harris had treated several years ago. That patient was a well-to-do man who was heavy and rather flabby, in whom they tried to find some constitutional disturbance or focus of infection to account for his trouble, but as far as Dr. Pusey remembered nothing could be found. He thought the condition might be a papulonecrotic tuberculid, but that it was not necessary that it should be. Sometimes dermatitis nodularis necrotica itches a great deal, and this is not a characteristic of the tuberculids. Dr. Pusey had seen a papulonecrotic tuberculid that approximated in extent this man's case, in a boy of 15 or 16 who was developed like a boy of 12. In this case there was no disturbance of sensation, and the condition was accompanied by Sternberg's tuberculosis. The condition of the legs was probably due to stasis. He had thought of vagabondism, but that would not account for the lesions on the body.

A CASE FOR DIAGNOSIS. Presented by DR. STILLIANS and DR. OLIVER.

A man, aged 42 years, a laborer, presented a cutaneous disorder which had been present for ten months. There was no history of a previous attack. The onset followed a series of twenty hypodermic injections of unknown nature. The first Wassermann reaction was reported as anticomplementary.

The skin of the trunk and extremities was very dry and separating in large scales. There was no redness or other sign of inflammation.

DISCUSSION

Dr. Pusey considered it a case of xeroderma. The history in such a patient was not of much weight. The man had probably taken so few baths before he had received the injections that he had never noticed the disorder.

Dr. McEwen asked whether any one had observed untoward skin disturbance from sodium cacodylate.

Dr. Pusey said he had seen sodium cacodylate produce generalized exfoliative dermatitis. He had a patient with psoriasis who was given sodium cacodylate at a sanatorium for supposed syphilis until he developed a universal exfoliative dermatitis. The eruption was universal, and the palmar lesions were characteristic of arsenic. The patient was improved greatly by keeping him oiled and at rest, and Dr. Pusey had learned since that he was well except for the palmar lesions.

Dr. Stillians said this man insisted that his skin was all right before he received the injections, and that this condition developed only after treatment.

MYCOSIS FUNGOIDES. Presented by Dr. Zeisler.

A woman, aged 32 years, had been under observation for five years, the disorder having first appeared eight years ago. There were recurring lesions in the axillary and popliteal spaces and in the groins. The lesions had cleared up rapidly under arsenic and radiotherapy. The lesions at first were moist and eczematous, but under the influence of roentgen therapy they dried and cleared up. She had been free from lesions at various times in the past five years. Itching was present. (This case was reported in full by Dr. Joseph Zeisler in the *Medical Clinics* of Chicago, 1916.)

DISCUSSION

Dr. Zeisler said it was a case of mycosis fungoides. The patient had had tumor formation at times, but this had rapidly receded under roentgen-ray treatment and arsenic taken internally. Large gyrate lesions of mycosis fungoides had been present at various times during the past five years, and the patient returned every year or so for treatment.

Dr. Lieberthal thought it was a wonderful result from treatment for there was no vestige of the former condition present at this time.

Dr. Senear agreed with Dr. Zeisler's diagnosis, and called attention to the fact that extreme undermining was taking place at the edge of the lesion.

A CASE FOR DIAGNOSIS. Presented by Dr. Eisenstaedt.

A woman, aged 27 years, presented a lesion on the chin which had been present for two years. She had been treated at a homeopathic clinic. During the last eight months the lesion had acquired a zone of redness. The patient had first been seen by Dr. Eisenstaedt one week previously. The lesion had been lanced twice at Ann Arbor Mich., and only blood had been obtained.

DISCUSSION

Dr. Pusey thought from the accuminate character of the lesion it was a cyst of some sort. It had about the consistency of a mass of tuberculosis, but

he did not believe one would get the conical, pointed lesion from that disorder. He thought it persisted because it was a cyst, and puncturing did not destroy the sack.

DR. MITCHELL thought it was a cyst.

DR. SENEAR believed it was a cyst, but thought on account of the purplish color one should keep in mind a melanoma, although the shape of the lesion did not suggest this.

DR. BEESON believed it was a cyst.

DR. EISENSTAEDT was impressed by the peculiar color which Dr. Senear noticed, and the idea of a possible lymphangioma or a melanoma occurred to him. He had first seen the patient one week previously, and she stated that the lesion had persisted for two years and that only blood came out when it was punctured. The idea of a cyst had not occurred to him, but he saw the possibility of its being such a growth.

DR. PUSEY thought an accumulation of blood might account for the black spot in the center of the lesion. He suggested that it be opened, the contents scraped out and the actual cautery applied to the wall. He believed this would eradicate it and not leave much of a scar.

DR. SENEAR said he had seen a patient with a lesion similar to this, a deep-seated lesion with much the same color. Proceeding on the theory that it was a cyst, Dr. Pusey had punctured it with the actual cautery. Only blood was obtained, and the lesion disappeared temporarily but recurred; on repuncturing, it again disappeared. That lesion was in the cheek and on opening the mouth to get the finger in he found definite varices of the veins of the mucous membranes and believed the lesion in the cheek was a varicositis. The cautery was used because they feared a malignant growth.

DR. STILLIANS said Dr. Eisenstaedt had suggested that it was an atypical angioma, a variation of the spider nevus with a small cavernous lesion in the center. He thought this was plausible, and that it might account for the lesion.

ANGIOKERATOMA OF THE TOES. CHILBLAIN CIRCULATION OF HANDS. Presented by DRS. PUSEY and SENEAR.

A young woman, aged 29 years, who had been shown in 1917, with angiokeratoma of the toes and fingers, showed a severe chilblain circulation in the hands, the latter being puffy and bluish in color. The lesions had been destroyed by fulguration and electric cautery, and there had been only few recurrences. The patient was shown at this time because she had begun to develop punctate angiomas of the mucous membranes.

DISCUSSION

DR. EISENSTAEDT said it was a typical case of angiokeratoma, and the extraordinary chilblain circulation of the hands was either stationary or getting worse. He thought it would be interesting to try to accomplish something therapeutically, but he knew of nothing to do for chilblain circulation in the hands. At present, he was taking care of a strong, robust man who had a similar condition of the feet. There was a peculiar disturbance of circulation, with three distinct ulcers, the first one of which appeared three months ago. He had succeeded in almost entirely healing the ulcers, but beyond that point he was at a loss to know what to do. He had used galvanism, which was

purely palliative. Just what similarity there was between these cases and a definite gangrene seen in a young man of 26 years recently, he did not know. He had used Ringer's solution for that condition, but this type of a case he considered different.

Dr. Pusey thought the case was interesting in the results of treatment. He did not understand how any one could consider the condition an angiokeratoma, for no keratomas were left. Dr. Senear had removed them by means of fulguration and the cautery. As to the asphyxia in the extremities, it was progressing, and he believed this was a fundamental disturbance that could not be corrected.

Dr. Senear thought the development of lesions in the mucous membrane during the last six months was interesting. In view of the mucous membrane lesions, he was inclined to look on the development of the lesions on the hands and feet as entirely independent of chilblain circulation, although the latter had perhaps increased the severity of the condition. There were no active mucous membrane lesions at this time; they had evidently become thrombosed and disappeared spontaneously, but a week ago the patient had one definite new lesion and one involuting lesion.

VERRUCOUS NEVUS. Presented by Dr. Mitchell.

A boy, aged 9 years, presented a verrucous hairy lesion on the left buttock which had been present for five years. The father was not absolutely certain about the duration, but felt sure that the lesion was not present at birth.

The lesion was a semicircular, verrucous lesion with numerous course hairs, and comedo-like lesions about either end. Various methods of treatment had been tried before the patient came under observation.

DISCUSSION

Dr. Zeisler considered the lesion a tuberculosis verrucosa cutis.

Dr. Eisenstaedt agreed with Dr. Zeisler.

Dr. Pusey said he could not, on account of the abnormal growth of hair, see how it could be a tuberculosis verrucosa cutis, but it might well be a verrucous nevus.

Dr. Senear thought the scarring pointed to a diagnosis of tuberculosis verrucosa cutis.

Dr. Mitchell believed it was a verrucous nevus which had been treated with carbon dioxid snow. The father said it was not present at birth, but he was not quite sure about it on close questioning. No biopsy had been obtained, but considering the hair and other symptoms, he thought the diagnosis of verrucous nevus was correct.

LESION ON THE TONGUE. Presented by Drs. Ormsby and Mitchell.

A man had received treatment at the Central Free Dispensary since October, 1918. At that time he had a primary lesion and was given injections of arsphenamin but no mercury, as he could not tolerate this drug. He had a lesion on the forehead and others which he described as felons. He was first seen by Dr. Mitchell two days ago, after having received six intravenous injections within a few weeks. Lesions had recurred on the

tongue, and the one now present had resisted all treatment. At the time of presentation the Wassermann reaction was negative.

DISCUSSION

DR. PUSEY thought the lesions were recurrent syphilis.

DR. ZEISLER thought it was tuberculosis of the tongue. Jadassohn had described a chancriform type of tuberculosis of the tongue characterized by its chronicity and resemblance to chancre and epithelioma. In his opinion, the lack of response to antisyphilitic treatment would rule out syphilis.

DR. MITCHELL said that the condition had resisted all previous treatment. He had seen the patient in the Dispensary and considered the patient interesting as one of those who will sometimes float along, come in and have an injection and receive it without any questions being asked. The Wassermann reaction was negative at present, and had been since early in the course of the treatment. He had first seen the patient only a few days previously.

DR. LIEBERTHAL thought it was not surprising to see patients of this kind. He had recently seen a patient who had received thirty injections of arsphenamin at a clinic. He had had a glossitis in the beginning and after three injections the condition cleared up, but two or three weeks later the tongue was again sore. The patient ultimately came to Dr. Lieberthal, and as he had received enough arsphenamin he put him on mercury, as he also had a palmar syphilid which was not clearing up. The patient was given injections of calomel, and then said he could not stand the injections on account of the pain, so salicylate was substituted. The man had now been free from symptoms for some months without the administration of arsphenamin. Dr. Lieberthal thought one should be exceedingly careful about employing arsphenamin after it had been used over a long period. He intended to subject his patient to further intensive mercurial treatment.

DR. MITCHELL said that, according to this man's story and history, he could not tolerate mercury.

DR. OLIVER stated that he had seen this patient once at the night clinic at the dispensary, and at that time the lesion looked like a recurring syphilitic lesion, although tonight there seemed to be more induration.

LICHEN PLANUS. Presented by DR. JACOBSON (by invitation).

A negro, aged 24 years, presented an eruption which had been present for two months and was accompanied with considerable itching. The eruption was first noticed on the flexor surfaces, gradually becoming generalized. At the time of presentation the Wassermann reaction was negative. Thickly set on the forearms, more discretely on the arms, shoulders, neck and thighs, were circinate lesions consisting of a dark brown, macular center surrounded by an elevated ridge 1 or 2 mm. wide and 1 mm. high, which was about the color of the normal skin (light brown). These lesions were confluent in places on the forearms, presenting a striking appearance. Here and there in the vicinity of the circinate lesions could be seen flat, angular papules. No lesions were found in the mouth and a few about the genitalia.

DISCUSSION

DR. PUSEY thought the case was an extensive one of lichen planus in the negro, and that it was an interesting and beautiful example of that disorder.

SCARS FOLLOWING ZOSTER OF THE NOSE. Presented by DR. STILLIANS.

A man aged 35 years, stated that several months ago he had had a peculiar sensation along the left side of his nose, but no pain. Following that two crusted spots appeared, one on the left side of the tip of his nose and one on the left side of the bridge, and persisted for several weeks. When the crusts were removed deep ulcers remained, but finally healed. The left side of the nose was numb for some time, but there was no pain at any time.

Near the tip of the nose on the left side was a depressed scar 0.7 cm. in diameter, with dilated blood vessels crossing it. On the left side of the bridge of the nose was situated a depressed scar 0.3 cm. in diameter, covered by skin of nearly normal color and texture. All blood examinations were reported negative.

DISCUSSION

DR. OLIVER pointed out that there was definite telangiectasia around the edges and in the center of the spot, and believed epithelioma should be considered.

DR. SENEAR thought the lesion was only a scar made up of two parts—a large depressed, irregularly outlined scar with a tumor formation, traversed by well defined telangiectasia at the center. He believed the picture might be produced by a keloid formation at the center of a scar.

DR. STILLIANS said he had considered zoster, but the patient said there had been no pain. He had thought of an epithelioma on account of the shape and the fact that the center was soft.

JAMES HERBERT MITCHELL, Secretary.

NEW YORK DERMATOLOGICAL SOCIETY

Regular Meeting, Feb. 22, 1921

JAMES MCF. WINFIELD, M.D., *President*

CASE FOR DIAGNOSIS. Presented by DR. TRIMBLE.

The patient was a young man, aged 26, born in Canada. His previous history was of no consequence, except that he had had infantile paralysis when a child, which had permanently affected the left arm.

His arms and forearms from the shoulders to the wrist were thickly studded with great numbers of small guttate lesions, rather uniform in size; slightly infiltrated, and mildly pink with a marked yellow hue. Some of the lesions were distinctly infiltrated, giving a papular feel to the finger. The lesions itched slightly, but the pruritus was not a marked factor.

The eruption was also present on the chin and sides of the mouth, and resembled a superficial seborrheic eczema in these locations. The duration was one year, the eruption having begun on the neck and spread downward. There was no venereal history, and the Wassermann test was negative.

DISCUSSION

DR. KINGSBURY suggested that there might be an element of xanthoma in the condition, notwithstanding the scaling. The way the striae ran on his arms,

beginning on the neck, suggested some metabolic disturbance. The patient was evidently not in good health, and the urinalysis might reveal glucose; or the blood chemistry might show an abnormal condition.

Dr. Williams said that if the condition had been in a child instead of a man of 20 odd years, he might have thought it a case of urticaria pigmentosa. As it was, he did not know what to think of it.

Dr. Wise thought it might be a form of parapsoriasis. It did not seem to be a xanthoma, as it was not yellow enough, nor was there enough pigment to suggest urticaria pigmentosa. A biopsy would probably reveal the diagnosis.

Dr. Lane said that he felt it was impossible to make a diagnosis of this case at present without a biopsy. He had never seen a case of parapsoriasis with as much thickening of the patches and elevation of the lesions as was present in this case. The lesions themselves and their distribution bore more resemblance to urticaria pigmentosa.

Dr. Highman did not think anything definite could be said about the case. The first diagnosis that occurred to him, and the one he most leaned to, was urticaria pigmentosa, since the lesions resembled that condition more than any other. The striping was significant, and both the distribution and arrangement were seen in children with urticaria pigmentosa. The fact that the condition occurred in adult life was rather against that diagnosis, but no other clinical entity seemed to conform to the picture the patient presented.

Dr. Trimble said he had seen the patient only once, the previous afternoon, and on examining him carefully several diseases were thought of as a diagnosis of the condition, only to be discarded. Parapsoriasis guttata received most consideration, although the nodular character of the lesions was against that diagnosis. Tinea versicolor was considered but could not be proved. Xanthoma had occurred to him, though it seemed like a stretch of the imagination to consider that condition. Urticaria pigmentosa had not been considered. The patient's lesions might possibly be a type of lesion he had seen on two previous occasions—xanthoma elasticum. One of the patients he recalled vividly; the lesions appeared on the side of the neck and resembled this eruption somewhat. The eruption had a definite linear arrangement, and was the same color as the lesions on the patient shown. There was a tendency to form lines in the elbow flexures of the present patient.

The patient's scalp had been examined carefully, for it was thought the condition might be a seborrheic eczema, but that diagnosis was also discarded. The man's general health seemed to be below par. A blood picture might help clear up the diagnosis.

CASE FOR DIAGNOSIS (PROBABLY PARAPSORIASIS). Presented by Dr. Trimble.

A man, aged 39, a native of the United States; presented irregular, pinkish noninfiltrated patches, mainly on the trunk; they ranged in size from that of a ten-cent piece to that of a silver half dollar, and there was practically no scaling. Mild itching was a feature, and the duration of the condition was six months. The tentative diagnosis was parapsoriasis of the type érythrodérmie pityriasque en plaque disseminées.

DISCUSSION

DR. WISE agreed that it was difficult to determine the difference between a parapsoriasis and a premycotic erythema in many instances. He thought this case was one of parapsoriasis.

DR. CLARK said he had seen no infiltration in the lesions, and there was not the itching usually present in a premycotic erythema. He thought the condition was parapsoriasis.

DR. HIGHMAN was strongly inclined to believe that it was a premycotic eruption. The condition was rather more glazed and edematous than one would expect in parapsoriasis, and the situation of the erythema on the lower half of the body was in favor of early mycosis.

DR. WILLIAMS thought it a premycotic erythema. There was little scaling and a distinct infiltration of some of the lesions and a slight swelling, particularly in the lesions over the left iliac crest—about what one would expect in the earlier stages of a premycotic erythema. Dr. Highman had spoken of the glazed appearance which is characteristic; in parapsoriasis one would expect, not a smooth surface, but a rough or slightly scaly surface. The fading out of the periphery was more like a premycotic condition than a parapsoriasis. Probably, if the man were watched long enough, he would develop a mycosis fungoides.

DR. SCHWARTZ thought the condition was parapsoriasis.

DR. G. H. FOX said he had seen a number of cases which turned out to be typical mycosis fungoides in which the patient at the outset presented the same eruption that this man had.

DR. WINFIELD said he could find no one lesion that was scaly, and the one on the arm inclined him to agree with the diagnosis of premycosis.

DR. LANE said that Dr. Clark had remarked on the lack of induration or infiltration in a premycotic erythema. It was his impression that in premycotic erythema there might be no palpable infiltration for a considerable length of time.

DR. CLARK replied that that might be correct, for there must be a stage in which there was no infiltration in the lesions. None of these showed any infiltration.

DR. WISE referred to a case presented by Dr. Pollitzer about fourteen years ago as a possible case of premycosis. The patient was a New Jersey physician whose body was covered with infiltrated scaly lesions; the biopsy revealed changes which were interpreted to be parapsoriasis. The patient was still living and actively engaged in practice; the eruption had persisted, but showed no evidence of fungoid lesions.

DR. G. H. FOX said that while pruritus was often intense in the early stage of mycosis fungoides, there were cases in which it was notably absent, especially when there were erythematous patches such as this man had.

DR. TRIMBLE said that he had thought of several of the diagnoses discussed before presenting the case. At times when the diagnosis of parapsoriasis is made it turns out to be premycosis, and vice versa. His own inclination in this case was to parapsoriasis, for the reasons presented by several of the members.

PEMPHIGUS OF THE MOUTH. Presented by DR. CLARK.

Mrs. M. S., aged 43, born in the United States, married, the mother of one child, was in good health. The patient was never vigorous, but her general health had always been good, and she was always able to do everything; she had had all the children's diseases except whooping cough. Her last serious illness was at 11 years of age. She was operated on nine years ago for a prolapse of the stomach, and six years ago had a tumor, probably ovarian, removed from the right side.

Seven or eight years ago she noticed that the gums of the lower jaw were receding and that they had become spongy. She was then wearing a plate in the upper jaw and was frequently troubled with canker sores under the plate; she had a new plate adjusted, and all teeth were cleaned and treated. About four years ago all teeth were extracted as the whole mouth was then sore, especially the mucous membrane of the cheeks. Since that time, at intervals, the roof of the mouth and the mucous membrane of both cheeks had been sore. From time to time the edge of the tongue had been tender and sore.

As presented, the patient had no teeth. The gums were retracted, healed and apparently normal. The roof of the mouth showed no lesions. On the buccal mucous membrane on both sides were seen areas with superficial slough and several beef-red, raw, level areas, previously the site of blisters or bullae. The left side of tongue near the tip showed an irregular slough, as if it had been touched with silver nitrate.

The patient's general health and the condition of her mouth had improved considerably during the past six months under big doses of arsenic, but the condition of the mouth had never healed. Due care and consideration had been given to the patient's digestive apparatus, and she had been almost entirely on a vegetable diet. She seemed to be well nourished (weight, 130 pounds), with a good color and complained only of the extreme soreness in her mouth.

The blood and spinal fluid were negative to the Wassermann and other tests, and smears and cultures from the mouth failed to show anything unusual.

DISCUSSION

DR. HIGHMAN agreed with Dr. Clark's conception that the condition was pemphigus of the mouth, in spite of the fact that it had remained so long without any outbreak on the body; for in the vast amount of material seen at Mount Sinai Hospital there were cases of buccal involvement that had lasted as long as two to five years preceding cutaneous involvement. When it appears the patients usually succumb rapidly.

DR. TRIMBLE commented on the increasing frequency of these cases within the last year or two. He had seen a patient with Dr. Bechet a few weeks ago who had gone on without any cutaneous appearance or outbreak. Another patient had come to the office three days previously; the last one he had seen had had lesions in the mouth for eighteen months before there were any lesions on the body. He was beginning to think that whenever distinct blebs appear and continue to recur in the mouth, regardless of their size, they nearly always turn out to be pemphigus lesions.

DR. BECHET said he thought that in these cases of bullous eruptions in the mouth, the diagnosis of pemphigus should be entertained, especially if other diseases could be excluded. Treatment undertaken early might possibly check further development of the disease. This had been especially brought to his

attention by the observation of two recent cases. Both patients had developed a fulminant pemphigus eruption on the body, after it had remained localized in the mouth for months. One of the patients had had lesions in the mouth for a year before they appeared on the body. Three months after their development she was moribund. In the other case the oral lesions had been present for three months—the body was entirely free. She was presented at the New York Academy of Medicine on Jan. 4, 1921, with a tentative diagnosis of pemphigus, which was not agreed with, the consensus of opinion being that it was an aphthous stomatitis. One month later an extensive bullous eruption, typically pemphigoid in character, developed. The diagnosis was unquestioned by this society. Six weeks after the appearance of the eruption there was a marked asthenia, and an approaching fatal termination was plainly evident. These two cases might possibly have followed a more favorable course if they had been recognized earlier.

DR. WINFIELD said that this case of Dr. Clark's was almost a counterpart of one that he himself had reported at a previous meeting.

DR. CLARK said he had put a question mark after the diagnosis because of the positive history of a generalized bullous eruption in the mouth for a period of five years without any eruption on the body, and probably a history of an eruption extending over a part of the mouth for two years before that. The patient had gained distinctly after the administration of big doses of Pearson's solution in 15 minim doses, taken in milk of magnesia during the day, while on a vegetable diet. She tolerated arsenic very well, and had been taking it off and on for the past year.

He had hoped there would be some discussion as to what more might be done for her to prevent an outbreak on the body. Pearson's solution was the sodium salt. She had been taking about seven doses a day, at two hour intervals.

DR. HIGHMAN mentioned three other methods of treating pemphigus that were useless—with arsphenamin, silver arsphenamin and Coley's fluid. After one injection of the last a patient seemed better, but later became worse. It did not seem reasonable to put a patient of this kind on a vegetable diet. The condition was plainly catabolic, and the patient should be nourished as much as possible—seemingly with any diet rather than a vegetable diet. He had tried quinin intravenously, without any benefit.

DR. WINFIELD said he had seen a good many cases in the last few years and had tried arsphenamin, but thought it made the patients worse. So far as a vegetable diet was concerned, he agreed with Dr. Highman. The patient should be well nourished.

Dr. Winfield said he had tried Fowler's solution in large doses, but without any benefit, and he had known of one patient who recovered under autoserum treatment.

DR. KINGSBURY said he had never seen any benefit derived from arsenic in a frank case of pemphigus. The patient Dr. Clark had shown had undoubtedly improved physically under the medication administered.

DR. BECHET said he had been looking up the question of prognosis in some of the recent textbooks, and had been struck by the favorable views taken by some of the authors. He had been under the impression that a well developed case of pemphigus with extensive involvement of the oral mucous membrane ultimately proved fatal. He would appreciate an expression of opinion on the part of those present on this interesting subject.

Dr. Clark said he had worked with this case along the lines mentioned by the members. Some one had spoken of the necessity of nourishing these patients. He had tried that for a long time, and the woman was losing weight and her mouth was doing badly; she could not take arsenic well, and was having a good deal of indigestion. She made no gain in weight until meat was eliminated from the diet, and then indigestion ceased. With the use of acetate of potassium and rhubarb and soda after meals she had had no indigestion, had gained ten pounds, and was able to take reasonably large doses of arsenic; her mouth was also better. She was put on an absolute vegetable diet. This was his first experience with such a diet in pemphigus.

Dr. G. H. Fox said that with regard to arsenic in general, he had long ago made up his mind that while it was able to produce the most brilliant results in some cases, as usually administered, it had a bad effect in about nine cases out of ten. Nothing had caused him to lose confidence in Jonathan Hutchinson so much as his assertion that arsenic was a specific for pemphigus. He himself had rarely, if ever, seen any benefit that could not be attributed to the natural course of the disease; time after time he had seen arsenic administered without the slightest effect in controlling the eruption of the bullae. He had often wished that there could be a law preventing the ordinary medical practitioner from using arsenic in every case of skin disease. The patients would be far better off.

DERMATITIS VENENATA OF THE HANDS FROM HAIR DYE.

Presented by Dr. Howard Fox.

L. G., aged 42, married, a colored woman (octoroon) born in the United States, six days ago had assisted a friend in dyeing her hair with one of the well-known commercial hair dyes sold in two separate bottles. Her hands, which had been in contact with the solution for about three-quarters of an hour, became stained, though she was able to remove most of the stain immediately by the use of hydrogen peroxid. On the following day the eruption appeared. This consisted of a swelling of the hands, particularly of the fingers, and a profuse eruption of pinhead to pea-sized, mostly unruptured, vesicles. The fingers were tender to the touch, and the patient complained of severe burning which interfered with her sleep.

DISCUSSION

Dr. Lane said that such cases had been reported by barbers by several French observers, and that a number of years ago Dr. Fordyce had reported a case in a barber and had published a photograph of the affected hands.[1]

Dr. G. H. Fox told of an interesting instance of a man who some years ago used a well-known hair restorer, and who had a dermatitis or eruption on his scalp. He wrote to the manufacturer about it, and was told the preparation was harmless, that he could wash his hands in it, and it would do no harm. He tried this and almost immediately after spots developed on his cheeks and on the backs of his hands. Later he brought suit against the company. Their lawyer had consulted the speaker, and on request brought the patient for an examination. There were white spots on his hands and cheeks and neck. A few spots of vitiligo had accidentally developed about the time

1. Fordyce: J. A. M. A. **59**:2043, 1912.

he used the hair restorer. The patient, an intelligent man, thereupon withdrew his suit. Before a jury these facts would have had considerable weight in establishing a claim of cause and effect.

SECONDARY SYPHILIS WITH LESIONS INDISTINGUISHABLE FROM PITYRIASIS ROSEA. Presented by Dr. Howard Fox.

L. R., aged 15, a full blooded negress, born in the United States, about ten weeks ago noticed a genital sore, followed in a week or so by enlargement of the inguinal glands. About four weeks after the appearance of the genital lesions she noticed enlargements of the posterior cervical glands. About two weks ago she noticed an eruption on the left arm which had gradually increased in extent. She complained of considerable itching, though she stated she did not scratch the skin.

On examination she presented typical hard enlargements of the inguinal, cubital and posterior cervical glands, numerous flat condylomas about the vulva and anus, and lesions of the tonsils which resembled mucous patches. The Wassermann reaction was strongly positive. The eruption consisted of superficial, partly discrete and partly confluent grayish patches with branny scaling and no evidences of scratching. It was situated on the trunk, neck and arms. It was indistinguishable from a classic pityriasis rosea, all of the types being present including punctate, fusiform and circinate macules. There was no eruption on the face.

DISCUSSION

Dr. G. H. Fox said that if a few injections caused the eruption to disappear quickly, he would think it was syphilitic, occurring as it did about the time a secondary eruption would be expected; but if it persisted for six or eight weeks in spite of the injections it would seem more likely to be a case of pityriasis rosea.

Dr. Trimble said that if he did not know the syphilitic history, he would make a diagnosis of pityriasis rosea.

Dr. Wise said it was pityriasis rosea.

Dr. Clark said it was difficult for him to make a diagnosis of skin lesions in a negro. He was sure he had seen pityriasis rosea that resembled this case very much, but he could not make a positive diagnosis of pityriasis rosea. Dr. G. H. Fox had summed up the situation reasonably: if the eruption should disappear after injections of arsphenamin, all would agree that it was a secondary syphilitic eruption.

Dr. Highman thought it was pityriasis rosea. It was not surprising that a negress should have some condition besides syphilis. The therapeutic test, as outlined by Dr. G. H. Fox, would clear up the problem. He had, however, recently seen a case of pityriasis rosea that cleared up rapidly in thirteen days; it was about ten days old when he first saw it, so that the total course was about three weeks. If a therapeutic diagnostic test for syphilis had been made in this case nothing would have been proved.

Dr. Howard Fox called attention to a case recently shown at another meeting (not reported) in which an undoubted pityriasis rosea existed simultaneously with an initial lesion. In this case the sequence of events proved that the two diseases were present as a coincidence. In his case, the eruption which seemed a typical pityriasis rosea, had appeared at a time when a secondary

eruption of syphilis might well have been present. This he thought of interest on account of the close similarity at times of the macular syphilid and pityriasis rosea. The eruption in this case did not resemble in any way the circinate syphilid that is so characteristic of the negro, the face, where this manifestation was usually present, being entirely free.

SARCOID OF BOECK? Presented by Dr. Howard Fox.

E. G., 31 years old, a full blooded negress, born in the West Indies, a domestic, had first noticed a lesion on her nose five months previously. This had gradually increased in area, and now appeared as a round, smooth, purplish, fairly sharply bordered patch, the size of a nickel, situated on the lower half of the nose. It did not give rise to any subjective symptoms. It was somewhat infiltrated and slightly elevated at one point. The skin of the entire nose was unusually oily and the follicles patulous. She was a well nourished, robust appearing woman, in apparent good health. She presented no symptoms suggestive of leprosy.

DISCUSSION

Dr. Wise said the case interested him very much because he had in private practice a young negro woman from the Island of Barbados with exactly the same type of lesion. A biopsy had never been made. Whether or not it was a case of sarcoid, he could not say, but that seemed the nearest diagnosis one could make. A diagnosis of lupus erythematosus might be made, but there was no scaling. Without a biopsy the diagnosis was difficult.

Dr. Bechet thought the diagnosis of lupus erythematosus should be entertained. The follicles in the center of the lesion were prominent and patulous. Slight scarring seemed to be present.

Dr. Lane said he could discover none of the characteristics of lupus erythematosus in the lesion. The pores were somewhat enlarged but otherwise the epidermis appeared normal. Without the history he would have made a diagnosis of pigmented nevus. The lesion was soft, slightly elevated, and covered with normal skin. If not a nevus, it was probably a sarcoid of Boeck.

Dr. Clark was inclined to think it might be a case of sarcoid in the declining stage. He had seen cases of sarcoid disappear apparently without leaving any scar tissue or atrophy, and this might be such a case.

Dr. Howard Fox said opinion had been divided as he had expected it to be between sarcoid of Boeck and lupus erythematosus. It was not feasible to excise a piece of tissue from the nose, and the diagnosis would probably remain unsettled. He intended to try the effect of the Kromayer lamp with pressure.

MULTIPLE SEBACEOUS CYSTS OF THREE YEARS' DURATION Presented by Dr. Wise for Dr. Fordyce.

J. C., aged 34, presented innumerable barley-corn to split-pea sized, soft, hemispherical tumors on the trunk; interspersed among these were many comedones. The lesions were grouped chiefly about the anterior axillary fold and on the chest and upper abdomen. A biopsy confirmed the diagnosis.

FURTHER REPORT OF DERMATITIS VENENATA FROM CASHEW NUT. Dr. Howard Fox.

Miss M. L., a laboratory worker in the Department of Agriculture, suffered a severe dermatitis venenata in September, 1920, after handling oriental

cashew nuts.[2] On this occasion, during the handling of the cashew nuts, her hands had been stained black by the juice, which is a well-known cutaneous irritant. On Feb. 4, 1921, in preparation of a thesis on the nuts which had apparently caused her dermatitis, she again made microscopic sections, but used special precautions against further irritation. The nuts were opened by another worker in the laboratory and she handled the fragments with forceps and also wore rubber gloves. During her work, for about three hours, a piece of the shell lay on the table within a few feet of her microscope. Immediately behind her was an open pail, with no water, containing a half dozen shells of nuts that had been opened. On the same evening, as a supposed precaution, she had used some zinc ointment on her face. On the following morning the eruption appeared first on the neck (where no ointment had been used) and later in the day, on the face. It consisted of redness, swelling, itching and slight vesiculation. At the end of two weeks it had disappeared entirely. There was no other apparent cause of the dermatitis except the irritation of the volatile fumes of the juice of the cashew nut to which she had apparently been sensitized. She had not been exposed to any other known irritant, such as hair lotions, etc., had not been in the country for six weeks previous to the present eruption and until February 4 had not worked in the laboratory for two months.

Dr. Williams, referring to the interval after an exposure to poison ivy before the eruption develops, said that he remembered being exposed to ivy poisoning in the fall while trying to get out some dead vines. Three or four small vesicles appeared, but it was a week before the eruption amounted to anything at all.

Dr. Wise said he had seen the patient's eruption, and had not thought of ivy poisoning. Her eruption of dermatitis venenata was much more dusky, and resembled more a mild chrysarobin dermatitis than that of poison ivy. When he saw the case it was a dusky edematous eruption, and he had no doubt that the nut alluded to and nothing else was the cause of the eruption.

ACUTE GENERALIZED PSORIASIS FOLLOWING INJECTIONS OF ANTISTREPTOCOCCIC SERUM. CASE REPORT. Presented by Dr. Howard Fox.

G. M., 24 years of age, a married woman, born in the United States, for the past ten years had suffered from dry, scaly patches on both elbows, a condition which was said to have been psoriasis. About two months ago, she had an attack of "septic sore throat" for which she was given one subcutaneous injection of antistreptococcic serum. Following this injection the condition in the throat rapidly improved, but three days later a profuse eruption appeared suddenly on the greater part of the body, except the face, palms and soles.

When examined, after the eruption had been present for five weeks, she presented a typical example of punctate and guttate psoriasis, extensively distributed over the trunk and extremities. The scalp was also involved. The eruption occasioned a sensation of burning. Under treatment it had improved greatly during the past month.

Dr. Highman inquired how long the patient had been ill with the sore throat before she received the streptococcus serum. He had seen psoriasis frequently after a febrile disease when no serums or the like had been used,

2. Arch. Dermat. & Syph. **3**:202 (Feb.) 1921.

and wondered whether this was not due to the febrile reaction itself rather than to the injection. Many persons have acute psoriasis without having either fevers or receiving injections, and the latter probably had a coincidental rôle in the case reported.

Dr. Trimble, referring to the case of psoriasis, told of an instance in which two typical large psoriasis patches were limited to the elbows for years without an outbreak elsewhere. About ten years ago, when it became fashionable to wear short sleeves, the young woman thought she would like to get rid of the lesions, and was given chrysarobin ointment; immediately after the chrysarobin treatment, which started to clear up the patches, she had an outbreak of psoriasis all over the body, and has had it ever since.

Dr. Winfield said that several years ago he had published in the *Journal of Cutaneous Diseases* a report of a series of psoriasis cases—some of them in children—in which the first attack of psoriasis followed a sore throat. This winter he had seen two cases—one in a child, the other in a woman of over 30, who developed an acute attack of psoriasis two weeks after a streptococcic sore throat. Neither patient had ever had psoriasis, nor was there any history of the disease in the family. Recently one of the patients reported some years ago had returned with a typical attack of psoriasis. He was inclined to believe that in many cases of psoriasis the first attack could be traced to some affection in the throat, and therefore thought that the cause of psoriasis, whatever it was, sometimes gained access to the system through the tonsils.

REPORTS ON CASES PREVIOUSLY PRESENTED.

Dr. Williams said that of the two cases presented by him two months ago, one, a case of blastomycosis or possibly tuberculosis verrucosa cutis, had been shown at the Academy, and Dr. Pollitzer had suggested the possibility of syphilis. Arsphenamin had no effect on the patient, but after a second roentgen-ray exposure, the condition improved decidedly.

Another patient was presented the same evening with erythema bullosum or pemphigus. The man improved, and the skin healed, but on account of the poor circulation in the hands he was given iodid of potassium. The bullae reappeared. The iodid of potassium was stopped, and the skin rapidly approached normal, but he still had cold fingers.

Another case was that of a private patient who came for treatment about January 3. She had been in the country where poison ivy was plentiful, and she might have been exposed, though she had no knowledge of it. She had an acute vesicular bullous eruption on the hands and palms—a typical picture of a severe dyshidrosis. She also had small red papules or deep vesicles on the forearm. It seemed that it might be a possible case of epidermophyton infection, and she was given Whitfield's ointment, but it did no good. Two weeks later she was given soap and water and told to scrub hard and she reported that it disappeared within forty-eight hours after the scrubbing. After that Dr. Williams got a laboratory report of *Trychophyton asteroides* growing in pure culture from the roof of a vesicle taken at the first visit. Six weeks after the first visit, the skin was practically normal, except for a little dryness and scaling on the little finger, the spot where the eruption first appeared.

Dr. Clark reported the findings in a case of purpura hemorrhagica of the acute fulminating type. The patient presented himself after having had hemorrhages from the gums for five days. He went to his dentist who cleaned his

teeth, but he was not benefited. The day following he had punctate hemorrhages into the skin, and four days after the condition started he consulted the speaker with a history of dark colored stools and discolored urine. He was admitted to the hospital, and blood was found in the urine and dark colored stools. The gingival mucous membranes were bleeding, so that it was almost impossible for him to sleep owing to blood trickling down his throat. The patient looked as though he had lost considerable blood, and he had an evening temperature of 100.5. During the next five days he received 200 c.c. of horse serum. His temperature began to rise, so that it was thought he was having a serum sickness from the horse serum rather than anaphylaxis.

While the horse serum had stopped the bleeding from the gums almost entirely, and the bleeding in the skin and bowels, he still had blood in the urine, and it was thought he ought to have more serum. He received a transfusion under a careful aseptic technic, but his temperature remained high, and it was evident that he was seriously ill. Directly after that a blood culture was made, and a pure culture of what seemed to be *Staphylococcus albus* was found. A second transfusion was made after forty-eight hours, but the patient died, with a temperature of 106.5 F.

Blood was again taken from this patient under careful aseptic technic at the time of the second transfusion, and a pure culture of *Staphylococcus albus* was found. These cultures have from generation to generation and with time distinctly changed, so that the pathologists had later considered that this might be called a *Staphylococcus aureus* infection rather than a *Staphylococcus albus* infection.

No focal infection could be found. The illness came on without apparent cause. Naturally the question has arisen, whether or not he was infected with the *Staphylococcus aureus* at the time of his first transfusion while in a depleted state or at the time of his injection with the horse serum.

Dr. Clark said that in so far as he knew, no such findings had ever been recorded in a case of purpura hemorrhagica.

DISCUSSION

Dr. Highman said that sepsis often began with purpura, but that staphylogenic sepsis was rarer than streptogenic. On the other hand, in some purpuras a bacteremia rather than a true sepsis was seen. A differential blood count would have been desirable for purpura is one of the commonest precursors of leukemia. Often, in the later stages, one finds the staphylococcus or streptococcus as a secondary invader shortly before death. It did not seem probable that this man could have been infected by so careful a worker as Dr. Stetson, but more likely that he was septic from the start, having a cryptogenic infection.

Dr. Clark said the bacteria were slow in changing their color. They grew as ordinary white albus colonies, and changed in about ten days. He had recognized the truth of what Dr. Highman had said, that frequently there are purpuric lesions in sepsis, but this was a typical case of fulminating purpura hemorrhagica, beginning without any previous sepsis. The man had apparently been perfectly well, and the bleeding came on suddenly. When he presented himself he was well, except for the bleeding from the gums, the mucous membranes, and the intestinal tract and kidneys and into his skin. A mistake was made at the time in that orders were not carried out and cultures made at the first. When he received the second transfusion the culture that was

made at that time was the second culture. The blood picture at the time of admission showed no leukemic abnormality, a hemoglobin index of under 80, with three million red cells and a slight leukocytosis, with the normal percentage of polymorphonuclears to lymphocytes just about reversed.

FRED WISE, M.D., Secretary.

NEW YORK DERMATOLOGICAL SOCIETY

Regular Meeting, March 21, 1921

JAMES MCF. WINFIELD, M.D., *President*

CHRONIC ITCHING PAPULAR DISEASE OF THE AXILLAE (FOX-FORDYCE DISEASE). Presented by DR. HOWARD FOX.

Miss A. R., 20 years of age, a college student, born in the United States, first noticed an eruption in her axillae five years previously. On the entire area of the axillae, normally covered by hair, were numerous pinhead sized, firm, round, smooth, elevated reddish-yellowish, partly discrete and partly confluent papules. The eruption had always been attended with more or less itching. The disease was confined to the axillae, and the affected area was dry and devoid of hair. There was considerable pigmentation of the adjacent skin, due to recent roentgen-ray treatment. The patient was a brunette. She was a well nourished young woman, apparently in the best of health.

DISCUSSION

DR. LANE said that the roentgen rays seemed to offer the only hope of relief to these patients from the very annoying itching. None of the usual applications did any good. He had applied them all without any effect. There was great dilatation of the sweat glands and coils. It was difficult to say whether that was the result of the lichenified skin or whether the condition of the skin was the result of some toxic condition. Such cases were not limited to the axillae; they were sometimes seen about the pubic hairs and sometimes about the nipples.

DR. G. H. FOX agreed with Dr. Fordyce that the condition had something to do with the sweat glands that was entirely different from the ordinary lichenification of other parts. It was usually limited to the axillary and genital regions.

DR. BECHET asked Dr. Wise whether the lesions came under the classification of neurodermite, so accurately described by him in the *Journal of Cutaneous Diseases* in 1919.

DR. WISE replied that: most of the French writers included such lesions under the term neurodermite.

DR. TRIMBLE said he had seen many similar cases, and agreed with the diagnosis.

CASE FOR DIAGNOSIS. Presented by DR. TRIMBLE.

This case had been presented at the previous meeting for diagnosis, and was now presented with the biopsy report. M. C., a young man about 27 years

of age, an American, had a skin condition which had existed for one year. The locations chiefly affected were the shoulders, arms and forearms. There were also a few scattered lesions on the back. The individual lesion was a maculopapule, drop size, and of a distinct yellow color, slightly scaly and with no objective symptoms. There were a great number of these lesions situated close together, though always discrete. On the back and chest they were arranged in bunches or in groups; the infiltration in each lesion could be distinctly felt but not seen. The disease began on the neck and had slowly spread. The Wassermann reaction was negative; the urine examination was also negative except that there was a moderate excess of indican. The blood count was practically normal; blood sugar, 122 mg. to 100 c.c.

Pathologic Report: "Section shows a rather peculiar pathologic picture which is characterized by the following changes: There is a marked extracellular edema, which is in the upper part of the corium and continues into the adjacent epidermal structure above. In some places vesiculation appears imminent. In the epiderm there is found a peculiar hydropic degeneration of the 'prickle cells.' A cellular exudate is present in moderate amount, which is located around the hair follicles, blood vessels and sebaceous glands. This exudate consists chiefly of lymphocytes and plasma cells. The hair follicles are occluded with coreous plugs. There is also some moderate hyperkeratosis present. Unna's stain for mast cells, negative. Kresofuchsin stain for elastic tissue shows nothing significant. Diagnosis: Subacute inflammatory process."

DISCUSSION

Dr. Bechet said he hesitated to express any opinion, but was inclined to think that the diagnosis of parapsoriasis should be considered.

Dr. G. H. Fox said the case differed from any he had ever seen.

Dr. Lane said that the histologic examination had disproved his diagnosis of urticaria pigmentosa, made on the first presentation of the patient. The case was still obscure, but parapsoriasis seemed to be the most probable diagnosis.

Dr. Wise suggested that the microscopic slides should determine the case if compared with those from half a dozen other cases of parapsoriasis; if they belonged to the same class the slides should show some similarity. Dr. Trimble had not said it was not parapsoriasis, but had not been able to reach any definite conclusion. It would be interesting to make a comparison of the slides.

Dr. Trimble said the diagnosis was still in question, but he would be glad to follow out Dr. Wise's suggestion and compare the slides with others that had been identified. They had several specimens, though they were mostly of the papular type or the papular form of Juliusberg and the Brocq type of psoriasis in patches. If the case in question was parapsoriasis, then it would be the guttate type, and he did not think the Bellevue clinic possessed a specimen of that variety. He had seen only one other case, which had been shown at the Academy of Medicine several years previously.

LUPUS ERYTHEMATOSUS TREATED BY THE KROMAYER LAMP.

Presented by Dr. Howard Fox.

Miss G., 59 years old, born in England, had previously been presented (*Jour. Cutan. Dis.* **1**:714, 1920). She had been treated on an average of about once a month during the past year with the Kromayer lamp (distance treatment). As a result, the lesions on the chest (of a superficial type) had

entirely disappeared, while those on the face (more deeply infiltrated) had only been improved. The improvement after each treatment had seemed to be proportioned to the intensity of the reaction, the best results being obtained when vesiculation was produced.

DISCUSSION

DR. FORDYCE inquired whether Dr. Fox obtained results in the usual types of lupus erythematosus. He had been successful in curing several cases of lupus erythematosus of the fixed type by repeatedly curetting them, and following the curettage with tincture of iodin. In the majority of cases, recurrence took place, which should be treated in the same manner or by thorough cauterization with the galvano-cautery. By persistence in such treatment some patients could be cured permanently. He referred to one patient who developed severe catarrhal symptoms of the upper air passages whenever iodin was applied to the skin.

DR. G. H. FOX said he had once reported two or three cases of mild lupus erythematosus which he had cured with repeated applications of phenol; but in well developed cases he had never secured any perfect results except from curettage. He believed this treatment would cure nearly every case.

DR. BECHET told of a case seen in private practice in which the face, with the exception of the forehead, was completely covered with a superficial conglomerate patch of lupus erythematosus. Ninety-five per cent. phenol, thoroughly rubbed in with cotton swab, at intervals of two weeks, had within a comparatively short time reduced the lesion to half its original extent. Areas of healthy skin, several inches in diameter, appeared in the center of the diseased mass on the cheeks. The cosmetic results could not have been better. Unfortunately, the patient disappeared from observation before a complete cure could be effected.

DR. TRIMBLE said he had cured several rather stubborn cases and failed in others. He could confirm what Dr. Fox had said in regard to phenol. It was a very capricious disease; sometimes very simple remedies would cure a case, and at other times nothing would avail.

DR. G. H. FOX remarked that the late Dr. Allen used to lay great stress on using the curet—beginning from the healthy skin and working toward the center. When the central portion was merely scraped, the lesion was sure to return; but if care was taken to scrape from the healthy skin toward the center, better results would be secured.

DR. WISE said he would confine his remarks to the present case. The patient had had a very widespread, deep-seated lupus erythematosus when first treated, so that the result now exhibited was an excellent one, and the treatment was probably as good as any.

With regard to iodin: A woman had been treated at the clinic during the afternoon with a patch of lupus erythematosus on the scalp; every time iodin was applied a rash appeared all over her body, so that that treatment had to be abandoned and phenol substituted. It was rather unusual to see a case of iodism from a single application of iodin.

DR. HOWARD FOX thought that the quartz lamps produced the best results in lupus erythematosus when the patches were fairly superficial. For the deeply infiltrated lesions, he preferred flat applicators of radium (unscreened). Though he had had good results with radium, the frequent relapses and appearance of new lesions were discouraging.

KERATODERMA SYPHILITICA. Presented by Dr. Wise for Dr. Fordyce.

F. L., 52 years of age, had been infected by her husband twenty-one years ago. Six years later, the present trouble began on the right foot, and for the past two years the left foot also had been affected. The heels showed marked involvement, with hyperkeratotic masses thinning laterally into individual verrucous lesions which extended upward nearly to the malleoli. A similar case was described by Baker in the *Journal of Cutaneous Diseases*, April, 1918, p. 220.

DISCUSSION

Dr. Trimble saw no special reason for thinking the condition was syphilitic. It was possible, of course, though he did not think that syphilis often caused such a clinical appearance.

Dr. Fordyce said it was unusual for syphilis to cause a lesion of this kind, although hyperkeratosis might develop on a preexisting keratotic condition. He did not think antisyphilitic treatment alone would cure it.

LICHEN PLANUS. Presented by Dr. Wise for Dr. Fordyce.

M. K., a woman 48 years of age, presented a rather unusual eruption of three months' duration with a fairly general distribution. Pearly plaques appeared on the tongue, and about the left flank there was a definitely zosteriform arrangement of the lesions of lichen planus.

PIGMENTED NEVUS TREATED WITH THE KROMAYER LAMP. Presented by Dr. Trimble.

A. B., a young woman 26 years old, was under treatment at the University and Bellevue Clinic. On the left side of the chest, just below the clavicle, there was a light brown nevus slightly larger than a silver dollar. About half of this lesion was exposed to the Kromayer lamp for forty minutes (pressure) on Feb. 26, 1921, with the usual reaction. Some of the redness following the Kromayer light treatment was still observable, although the pigment was entirely removed. The case was presented to show the result of treatment with the Kromayer lamp.

DISCUSSION

Several of the members expressed the opinion that the result was very good.

Dr. Bechet said that while the result was an exceedingly good one, there was marked telangiectasia. Might it not be possible that the telangiectasia occurred more frequently after treatment of this particular type of lesion with radiotherapy or heliotherapy than after chemical cauterization? He might be mistaken in this premise, but he seemed to have observed such results.

Dr. Howard Fox disagreed with Dr. Bechet's remarks about radiant energy. While it was well known that both roentgen rays and radium could produce telangiectases, the same was not true, so far as he was aware, of the quartz lamps. In fact, the quartz lamps constituted one of the best remedies for the removal of telangiectases, especially when extensive areas were involved.

Dr. Wise said he had been much interested in the case and was surprised at what Dr. Bechet had said. He himself had never seen telangiectasis following the use of the quartz lamp. This patient showed only temporary inflammation. As Dr. Fox had said, one can certainly cure these conditions with the Kromayer lamp.

DR. TRIMBLE said that this was a very superficial pigmented nonhairy nevus, and it was evident that the Kromayer lamp would remove it. At his clinic, there was no fear in regard to the Kromayer lamp causing telangiectasis, although he had feared that perhaps all the pigment might be taken from the skin, leaving a white area like a spot of leukoderma instead of the normal skin. As for the use of chemicals, there was danger lest some of the strong acids might produce a keloid.

FIBROMAS OF THE VULVA. Presented by DR. HOWARD FOX.

F. C., 30 years old, a negress, born in the United States, married for the second time, first noticed the appearance of small tumors of the vulva two years previously. She presented one pedunculated, flattened, firm, small egg-sized tumor arising from the upper half of the right small labium. There were also two pedunculated tumors of chestnut and hazelnut size, respectively, arising from the upper portion of the small labium and the tissue surrounding the clitoris. They were firm to the touch, painless and were not lessened in size by compression.

ERYTHEMA INDURATUM. Presented by DR. WISE for DR. FORDYCE.

F. S., a woman 43 years of age, born in Austria, had been in this country for sixteen years. On both legs she presented involuting, nonulcerating nodules of several weeks' duration, firm and painless. The history and the Wassermann reaction were negative for syphilis.

CASE FOR DIAGNOSIS. Presented by DR. TRIMBLE for DR. MALONEY.

J. H., a white man, was born in Bulgaria thirty-four years ago, and had lived in England from the time he was 14 until nine years ago, when he came to the United States. For the past twenty years he had worked as a printer, with the exception of a period of about one year recently, during which time he sold fruit at an outdoor stand. With this exception, he had never been unduly exposed to the sun.

Fourteen years ago there appeared on the backs of both hands several reddish colored, pinhead-sized spots. Almost immediately thereafter, lesions of the same character appeared on his forehead and on one arm. These spots gradually increased in size until they reached their present dimensions "in a few years."

He presented thirty more or less round macular lesions on the forehead, each about one-eighth inch in diameter, reddish yellow in color and apparently pigmented; also fifteen similar lesions on the dorsum of each hand, and a few on the left arm. The lesions on the hands and arms were more irregular in outline and deeper red in color than those of the forehead. There were no subjective symptoms. Within the past month he had had a large area of tinea versicolor on his chest, which cleared up under treatment. Scrapings from the lesions of the forehead, arm and hands, when examined under the microscope, revealed no evidence of tinea.

CASE FOR DIAGNOSIS. Presented by DR. HOWARD FOX.

D. A., 17 years old, a negro, born in the West Indies, an elevator boy, three years previously suffered from an inguinal bubo, which had broken down and discharged for about a month. Since that time, there had been some perma-

nent enlargement of the inguinal glands, according to his statement. About one month ago he noticed two "pimples" on the sheath of the penis, attaining their present size at the end of two weeks. An interval of a day or two elapsed between the appearance of these lesions.

On examination, he presented two round, elevated, nickel-sized, button-like, hard, slightly tender lesions on the dorsal surface of the sheath of the penis. The overlying skin was dull reddish in color, dry, scaly, with no evidence of itching. In both inguinal regions there were visibly enlarged pockets of hard painless, separate glands. There was a small jagged scar in the left inguinal region, the result of the former ulceration. There was one enlarged cervical and one cubital gland, but no other signs suggestive of syphilis. The result of the Wassermann reaction had not been reported.

DISCUSSION

Dr. Schwartz and Dr. Potter were inclined to think the lesions were gummas.

Dr. Trimble said he had been trying to make up his mind as to whether they were two initial or two late lesions; he was rather more inclined to consider them initial lesions.

Dr. Fordyce did not think the lesions were the primary syphilitic lesions. He was rather inclined to regard them as gummatous.

Dr. Howard Fox said there was no doubt that the lesions of the penis were decidedly hard on palpation. In this respect they resembled multiple initial lesions rather than gummas or cutaneous tuberculosis. It had been difficult to elicit an accurate history, and a positive diagnosis at present he thought could not be made.

Dr. Winfield said that before the days of Wassermann one would have considered the case syphilitic. It seemed to be rather more usual for colored people to have enlarged glands than for white people.

PRURITUS WITH LICHENIFICATION AND NODULE FORMATION.

Presented by Dr. Wise.

M. P., 50 years of age and of German birth, had come to Dr. Wise two months ago giving a history of having had "eczematous" attacks in various locations at intervals during the past twenty or twenty-five years, chiefly on the hands and feet, and usually with marked pruritus. The condition presented dated apparently from the summer of 1919, having at that time started from the vicinity of abrasions on the left hand. It rapidly became generalized, and at various times he consulted Drs. Fordyce, Berk and Lapowski. In his business he came into daily contact with raw furs, and thus arose the suspicion that he might have become sensitized to fur products. He had handled no dyes. His body presented a diffuse eczematous eruption with lichenification, accompanied by numerous small nodular formations on the trunk and extremities. The lymph nodes were enlarged, apparently as a result of absorption of toxic products caused partly by infection from constant scratching.

DISCUSSION

Dr. Howard Fox thought it quite possible that the eruption had begun as an occupational dermatitis due to working in furs. He thought the pigmentation could be accounted for by prolonged scratching, and that it was not necessary for the patient to have taken any arsenic. The pigmentation, as well as

the thickened skin, was due to scratching. He did not think the eruption resembled mycosis fungoides, as some one had suggested before the patient was presented.

Dr. Kingsbury agreed with Dr. Fox in excluding mycosis fungoides. His first impression regarding the case was that the condition was due to the ingestion of arsenic, but the son also showed a great deal of pigmentation, so that arsenic could be ruled out. As for a fur dermatitis, one would hardly get such a condition from raw furs. If the furs were dyed, it would be another matter.

Dr. Trimble said he had seen a case very much like this one a number of years ago in Bellevue, and it was then called general lichenification. Dr. Williams had written it up in connection with a case of prurigo nodularis. He was inclined to think that arsenic had a good deal to do with the pigmentation and the enlarged follicles also. Of course, the itching and scratching might have caused a good deal of pigmentation, but the condition was so generalized and diffuse that it hardly seemed the man could have scracthed himself over the whole integument.

Dr. Bechet asked whether in his opinion a good deal of the pigmented-like appearance might not be due to a dirty skin. The patient might have neglected bathing for fear of the itching.

Dr. G. H. Fox said he felt certain that if Hebra had seen the eruption he would have called it a chronic erythemato-papular eczema—that was before the term lichenification was coined. If Duhring had seen it, he would have called it dermatitis herpetiformis. It presented all the earmarks of that disease. It was a chronic eruption occurring in a neurotic person in groups of papular vesicles, tending to get better until a new crop appeared, and it was extremely rebellious to treatment. Hot baths and inunctions of sulphur ointment would relieve, if not cure, the case.

Dr. Fordyce said he had seen this case two years ago, when it presented practically the same appearance as now. The diagnosis made then was generalized lichenification of the skin. He had been interested in this condition for a number of years, and had carefully observed a number of cases of it. He had also studied the condition histologically, and found that it showed a hyperplasia of all the layers of the skin, with an inflammatory reaction in the upper corium. There was no evidence of vesiculation nor other histologic findings of eczema. He had never seen such cases develop mycosis fungoides. It was difficult in this instance to determine the etiologic factor. He had, however, seen a patient with generalized lichenification who had had, since early childhood, recurring attacks of urticaria followed by the condition in question. This patient, after careful study, was found to be sensitized to egg white. Any food containing eggs was always followed by an attack of urticaria and by an aggravation of the existing lichenification. In Dr. Wise's case, the possibility of a sensitization to fur should be kept in mind.

GENERALIZED ERYTHRODERMIA WITH LICHENIFICATION. Presented by Dr. Wise.

M. P., Junior, 16 years of age and American born, had been for the past two months under Dr. Wise's care. His complaint was an intensely pruritic generalized eruption of three months' duration. At first it was strongly suggestive of scabies, but this possibility was soon excluded. With his father,

he had been daily exposed to raw furs while at work, and the fact that both father and son were affected was strongly suggestive of a common cause for their trouble, which might be of occupational origin.

In reply to an inquiry as to whether the father had taken arsenic, Dr. Wise said that he had taken it for a short period, but had not continued to take it and had not taken it long enough to cause pigmentation. He had been using carboneol on his skin and had refrained from taking any prolonged baths to get rid of the deposit. Most of the coloring matter was probably either natural or was due to the carboneol.

With regard to the fur dermatitis as a cause to be considered, it would be difficult to discover whether there was any kind of inoculation, especially in the father, as there was no normal skin to try it out on. There was great cause for suspicion since both father and son worked in the same shop and both had a dermatitis of this kind, but it was difficult to prove it without further investigation.

EPITHELIOMA OF THE PALATE. Presented by Dr. Wise for Dr. Fordyce.

A. B., an American sailor of 60, presented at the junction of the hard and soft palates and just to the left of the medial line, an ulcer of five weeks' duration. The lesion was circular and was about 1 cm. in diameter, with a raised edge and an irregular ulcerated base. There was no pain or emaciation, and no lymph nodes were palpable.

CASE FOR DIAGNOSIS. Presented by Dr. Wise for Dr. Fordyce.

An actor, 42 years of age, gave a history of having had a recurrent bullous eruption for months for the past six years, the mouth, the feet, knees, hands and elbows being affected. The lingual, buccal and gingival mucosae presented bullous lesions, and there was one on the shaft of the penis. Dermographism was present. Food tests had been made, with unsatisfactory results.

DISCUSSION

Dr. Trimble said he had had a similar case with lesions that came back in the mouth, and he called it pemphigus.

Dr. Wise said he had suggested the possibility of pemphigus, and that antipyrin had also to be considered—that and phenolphthalein caused bullae in the mouth and sometimes eruptions on the skin. Apolant had described excoriated eruptions in the mouth. This patient did not seem to have a normal mentality, and though he denied having taken any medicine, he admitted that he took a combined cascara tablet, which might have contained phenolphthalein.

KERATODERMIA OF THE PALMS. Presented by Dr. Wise for Dr. Fordyce.

G. S., a German-born man of 47 years, had lately done veneering in a piano factory. For the past six months his hands, feet and legs had presented a scaling dermatitis, the palms being hyperkeratotic and painfully fissured.

DISCUSSION

Dr. Trimble was inclined to consider the condition an occupational disease. Some one suggested ringworm infection.

Dr. Fordyce said he had never seen ringworm produce such an extensive keratodermia, but that that ought to be considered.

Dr. Wise said he thought it was an occupational dermatitis, but that the man used his right hand almost exclusively for his work, and that his left hand did not come in contact with the material used. Filtered roentgen-ray treatment would be tried on the case.

NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILIS

March 1, 1921

Howard Fox, M.D., *Chairman*

CARCINOMA EN CUIRASSE. Presented by Dr. Mitchell.

A married woman, 30 years of age, first seen on Feb. 10, 1921, gave the following history: She had an abscess of the right breast about 3 inches above her nipple in 1912, following pregnancy, for which she received surgical treatment. In April, 1919, she consulted a physician because of an indurated ulcer of the lip, a general reddish eruption and sore throat. Her blood at that time showed a ++++ Wasserman reaction. Since then she had received irregularly, weekly injections of mercury. In June, 1920, she felt a small lump in the scar of the abscess and was told it was probably a gumma; she was advised to continue with the injections of mercury. This lump grew rapidly, and she was advised in October, 1920, to have the breast removed, but refused operation. The lesion had spread rapidly, but did not cause much pain. On Feb. 10, 1921, a section was removed, and the report from the pathologist indicated carcinoma.

The lesion showed involvement of the right breast extending down on the abdomen and part way around the back, crossing the sternum in front and beginning on the left breast. The color ranged from pink in the newer part of the lesion to purple in the older parts. There were many dilated blood vessels and the skin was puckered, giving it the "orange skin" appearance. The patient was presented as a case of "cancer en cuirasse" in a woman with syphilis.

LICHEN PLANUS ANNULARIS. Presented by Dr. Chargin.

Mrs. M. R. was 25 years of age. Her skin affection began about a year and a half previously on both knees. Later, the eruption spread to the rest of the body. At the time of presentation she showed lesions on the arms, legs, chest, abdomen and back. The lesions were of typical character, but the especially interesting point was the great number of annular lesions on the abdomen and back. These varied in size from that of a pea to that of a five-cent piece, and many were confluent, producing festooned figures. Many of the annular lesions showed within, and alongside of, their margin numerous keratotic plugs. The mucous membranes were not affected. Subjectively, the patient complained of considerable itching.

URTICARIA PIGMENTOSA. Presented by Dr. Clark.

M. M., aged 19, born in the United States, in domestic service, was under observation in Dr. Clark's service at the Skin and Cancer Hospital. The present eruption began on her shoulders a year previously and slowly spread in a scattered way to her chest, arms, thighs and legs, and had shown no tendency to disappear. The lesions themselves had not itched especially, but at times the patient had been troubled with more or less general itching or mild burning. She complained of having had several bilious attacks, and she suffered from chronic constipation. As presented, she exhibited on the areas mentioned in the foregoing dull red or brownish pigmented-looking, distinctly raised papules. She exhibited an urticarial condition on rubbing the skin and marked dermographism.

DISCUSSION

Dr. Abramowitz inquired whether it was not unusual for urticaria pigmentosa to form a wheal when rubbed or traumatized. He had been unable to obtain this reaction on Dr. Clark's patient.

Dr. Clark replied that the patient had developed wheals on friction of the affected area.

Dr. Scheer said that he could confirm Dr. Clark's observation. He had rubbed one of the macules, and within a few minutes there was an elevation of about one-sixteenth inch at its site.

SYPHILIS (HEREDITARY) WITH PECULIAR BONE AND SKIN LESIONS. Presented by Dr. Clark.

R. J., a negress, aged 8, had had measles and whooping cough; otherwise, her adopted mother stated, she was well but seemed bad and irresponsible. Eight months previously the child had had some kind of an eruption, the lesions healing and new ones appearing at intervals. Recently it had been noticed that the elbows were stiff, and the child had trouble in dressing herself. The history was indefinite and unsatisfactory. As presented, the child showed scattered whitish scars on the body and extremities, and rather large parallel scars on her back with a tendency to keloid formation. Any of these skin lesions appeared as if they could have been traumatic, except for their general distribution. No active skin lesions were seen. Both elbows were almost completely ankylosed, and there was thickening of the humeri for about half their length upward from the elbow joint. A pronounced thickening was also noticeable on the skull in the right frontal region, also thickening of the tibia. These bony thickenings were not tender, and the child had not complained of much pain in the elbows. Her pupillary and other reflexes seemed normal. She was mentally alert and showed no stigmas. Her Wassermann reaction was negative. Roentgen-ray plates of the humeri showed a condensation osteitis and periostitis, and indicated that the lesions were specific rather than tuberculous.

DISCUSSION

Dr. Ochs said that the condition was more of a scrofuloderma, for the child had lesions on the chin as well as on the chest. It did not seem to him like inherited, or even acquired, syphilis. The lesions were scattered throughout, and there was no infiltration. On account of the glandular involvement, the lesions on the chin and the negative Wassermann reaction, the child impressed him as having scrofuloderma rather than syphilis.

XERODERMA PIGMENTOSUM. Presented by Dr. Clark.

M. D., an Italian girl aged 3, began to have a freckled-like condition with a sunburned appearance of her face seven months after birth. These lesions grew more pronounced and also appeared on the child's neck. Later, areas of the lesions grew scaly and crusty, and recently superficial ulcerations had appeared on the child's cheeks and her eyes became sore.

As presented, the child showed a typical and advanced condition of xeroderma pigmentosum, with freckles, keratoses, crusted lesions and superficial ulcerating epitheliomas. There was an ulceration on the left lower eyelid, and the child had a marked conjunctivitis of both eyes and photophobia.

DARIER'S DISEASE. Presented by Dr. Howard Fox.

L. T., 28 years old, an Italian woman, had suffered from an extensive eruption of Darier's disease for the past twenty years. She had been previously presented on several occasions (*J. Cutan. Dis.* **29**:181-551, 1911). The disease had increased by extensive exacerbations, with intervening periods of comparatively little change. She had been treated with both the roentgen ray and radium in the past ten years. Large areas on the abdomen had been treated with the old and unmeasured technic of the roentgen ray, and certain patches of eruption had apparently been permanently removed. A moderate amount of telangiectasia had been produced. In spite of this, new lesions had recently developed on these areas. Lesions on the neck had been treated with unscreened radium, with apparent removal, though with considerably deforming telangiectasia. In this region also, a fresh crop of horny papules had recently made their appearance.

PAPULOSQUAMOUS SYPHILID WITH NO APPARENT INITIAL LESION. Presented by Dr. Howard Fox.

A. D., 17 years old, a mulatto, born in Spain, presented a profuse generalized eruption of two months' duration. It consisted of discrete papules, a few of miliary type, others of scaling lenticular type, dull red and nonpruritic. Some of the lesions suggested lichen planus. There was a general adenopathy, but no evidence of any initial lesion was found. Coitus was denied. The Wassermann reaction was strongly positive.

PAPULONECROTIC TUBERCULID. Presented by Dr. Abramowitz.

Hilda B., a colored woman, 34 years of age, was born in the British West Indies, had resided in the United States for the past sixteen years, and was under observation at the Vanderbilt clinic. She was married, but had never been pregnant. Two years previously she had had pneumonia followed by pleurisy, and since then she had been troubled with "colds." The duration of the skin trouble was eight months. There were pea-sized raised umbilical nodules, several of which were pustular, on the backs of her hands and fingers. The extensor aspects of the lower and upper extremities showed some smaller sized papules also with depressed centers, and a few with keloidal scarring. There was one crusted lesion on her right ear. A biopsy and a Wassermann test had been taken, but no report had yet been obtained. There were no definite signs of tuberculosis in her chest.

SCROFULODERMA. Presented by Dr. Howard Fox.

F. T., 15 years old, a negress, born in the United States, first noticed painless swellings on the left side of her trunk two years previously. There was no family history of tuberculosis. She had from time to time expectorated blood, had lost weight during the past year, and had recently suffered from night sweats. She presented enlarged lymphatic glands in the lateral cervical and right supraclavicular regions and along the anterior axillary fold. Two of these were soft and fluctuating. On either side of the chest and on the left side of the neck were yellowish-green crusted lesions of irregular shape, one of them of rupial type. The individual enlargements had broken down and suppurated about six months after their initial appearance. The Wassermann reaction was negative; the von Pirquet test, positive.

CHEILITIS. Presented by Dr. Williams.

Miss L. S., aged 35, an American, said that for the past twelve years there had been an eruption on the middle of the lower lip, sometimes with a thick heaped-up crust, sometimes an erosion with a little inflammatory reaction. For about four years there had been a similar eruption on the upper lip, but never so severe or so extensive as on the lower lip. The crust was a thick translucent yellow masslike dried serum. For the past twenty-five years she had had a seborrheic dermatitis of the face.

GRANULOMA PYOGENICUM. Presented by Dr. Clark.

A. V., a girl, aged 6, born in the United States, first noticed a small pimple on her right cheek, near the lower jaw, three months previously. The lesion had grown slowly until it was the size of a large split marble. It had never been moist or discharged any purulent matter. As presented, the child showed a rather light-red, distinctly raised sessile tumor, sharply marginated, not in the least granular, and exhibiting numerous small blood vessels running from the periphery toward the center. The lesion was rounded, raised, a quarter to a half inch thick, and was quite firm though not actually hard to the touch.

DISCUSSION

Dr. Abramowitz said the case did not strike him as being granuloma pyogenicum, but rather some form of angiosarcoma. The lesion was smooth, dry, and traversed by small vessels. It rose directly from the skin, without a pedicle or base.

Dr. Lane said that he did not see how this lesion, which was covered with unbroken skin, could be classed as granuloma pyogenicum. This name was applied to a pedunculated granuloma projecting through an opening in the skin. It was possibly a hypodermal pyogenic infection, though in some respects it suggested a neoplasm.

Dr. Highman said that the diagnoses to be considered were granuloma pyogenicum and sarcoma. In the event of its being a granuloma pyogenicum, observation alone would tell. A great many sarcomas, however, had the appearance of the lesion presented in this instance. The only way of determination would be by microscopic examination. Of course, there would be certain risks in this, and possibly it was best simply to treat the child as though she had sarcoma.

Dr. Howard Fox said that the case seemed to have a slight similarity to the so-called button-like epithelioma. One would have had to consider this possibility more seriously if the patient had been an adult.

BROMODERMA. Presented by Dr. Clark.

S. W., a little girl, born in the United States, was under observation at the Skin and Cancer Hospital. She had had occasional convulsions for a number of years. Four months previously she began taking five teaspoonfuls of medicine each day, which promptly relieved her attacks. Two weeks ago pustules developed behind her right ear, followed by a similar lesion behind her left ear and lesions in her scalp. As presented, the child showed bromoderma-like lesions on her scalp and behind the left ear; behind the right ear was a large granulomatous-like mass the size of a lemon, pushing out the ear from the head and quite painful.

ACNE NECROTICA; TREATED WITH TUBERCULIN. Presented by Dr. Clark.

A. S., aged 39, a milliner, born in Roumania, had had acnitis of the face and head for a year and a half. The lesions were rather numerous and left rather pronounced and deforming scarring because of their size and multiplicity. The patient made no improvement under various methods of treatment, but began to improve promptly under tuberculin; after eight months of this treatment he showed no new lesions.

MORPHEA WITH LEUKODERMA. Presented by Dr. Clark.

J. M., a schoolboy, aged 15, born in the United States ,first noticed a whitish patch beneath his right eye about a year previously. A little later the patient noticed a whitening of the skin on the inner half of the right eyelid and eyebrow, and about that time some whitish spots appeared on the upper lip near the median line. As presented, he exhibited a typical yellowish, white, waxy hard band of skin extending from the nose and beneath the eye, while the inner half of the upper lid and eyebrow showed an equally typical leukoderma. There were several small spots of leukoderma on his upper lip.

FOLLICULITIS DECALVANS. Presented by Dr. Howard Fox.

J. J. R., salesman, born in Russia, came to the United States nine years ago. A year or two later the disease of the scalp was first noticed. He was certain that it had not existed when he was in Russia. He presented numerous small, partially bald and coalescing areas scattered over the vertex, the largest area being the size of a dime. They were whitish, smooth, thickened, and the hair was somewhat coarse. There were no crusts, and no fungus was found on microscopic examination.

RAYNAUD'S DISEASE. Presented by Dr. Williams.

Miss J. McK., aged 53, said that her trouble first started in the left index finger three years ago. This finger, without any apparent cause, became blue and cold at the tip, and the coldness spread farther up the finger, and later involved all the other fingers. When shown, all the fingers were blue and

cold, and the skin around them was very tight. The patient had been under observation for three weeks, and had been given arsenic by mouth with no apparent result up to date.

LYMPHANGIOMA OF TONGUE. Presented by DR. CLARK.

H. S., a girl aged 16, born in the United States, first noticed a small spot on the upper surface of her tongue near its center, five years ago. She described it as a bluish-white mark, such as might be left from an indelible pencil. The lesion slowly increased in size from time to time rather than gradually, and from time to time it would become perceptibly darker, remaining so for two or three weeks, when it would lighten up again.

As presented, the patient showed a rather flat circumscribed lesion on the tongue, about the size of a peanut, the posterior end of which gave a rather warty appearance, while the anterior half presented a group of translucent shining vesicles with a few black or brownish periods scattered around them like pepper grounds. The whole lesion was distinctly raised.

DISCUSSION

DR. HIGHMAN asked why any diagnosis was made. Why lymphangioma? It looked like a papilloma. In his opinion, the case should be presented without any diagnosis until an anatomic examination could be made.

DR. LEVIN said the case impressed him as being lymphangioma circumscriptum. It was situated on the dorsum of the tongue which was one of the common sites for the occurrence of this condition. The whole lesion was an elevated papillary growth on which there were grouped tubercular lesions, some of which appeared to contain fluid.

DR. CLARK said that in the daylight one could see at the lower end of the lesion typical small transparent vesicles grouped, with scattered small reddish dots, like pepper granules. When seen in daylight the condition was without question lymphangioma.

TUBERCULOSIS OF THE NOSE AND UPPER LIP. TUBERCULOUS ULCERATIONS OF THE PHARYNX AND THE UVULA. Presented by DR. MAX SCHEER.

W. J., aged 24, colored, born in the United States, single, presented himself at the Vanderbilt clinic on February 16, in the service of Professor Fordyce. He gave a history of a genital sore two years previously, which was followed by a sore throat but no skin eruption. At that time he received one injection of arsphenamin. During the past four months he had received one arsphenamin treatment and mercury by injection three times a week.

The trouble for which he was presented began four months ago, with pain in the throat and lesions on the upper lip and nose. The uvula and pharynx presented a few small nodules, and also a few small painful ulcers of irregular outline. The skin lesions were situated on the upper lip and lower half of the nose. The entire area appeared lobulated and violaceous in color, and consisted of nodules which had coalesced and ulcerated.

The histologic examination showed marked acanthosis which had resulted in a verrucous formation. In the derma there was tissue of a characteristic tuberculous structure (giant, plasma and epithelioid cells in nodule formation), and a marked inflammatory reaction tissue (dilatation of vessels, edema, round and connective tissue cells).

METASTATIC CARCINOMAS OF THE SKIN FOLLOWING A MELANOMA OF THE MUCOUS MEMBRANE OF THE UPPER JAW. Presented by Dr. Clark.

S. M., aged 40, a laborer, born in Poland, was operated on in October, 1920, for a black tumor of the gum, in the region of the lateral incisor and canine teeth. A few days later, an operation was performed on the right side of his neck for enlarged glands. One month later, glands were removed from the left side of the patient's neck. Three weeks ago the patient first noticed in the skin small nodular swellings scattered over the body and extremities. These swellings slowly enlarged until, when presented, some of them were the size of marbles; they had become slightly red and seemed to be breaking through the surface. The patient also showed a melanoma, extending back from the site of the operation on the hard palate and on the gum of the upper jaw. Numerous marble-sized tumors could be felt, slightly tender and quite hard, deeply-seated in the skin of various parts of the body. His liver, spleen and other internal organs seemed normal, but his health seemed to be failing.

The pathologic examination of one of the tumors showed it to be carcinoma.

PSORIASIS. Presented by Dr. Williams.

H. M., a man about 55 years old, said that twelve years ago a red scaly eruption appeared on his back, which spread in patches to various parts of his body, at times improving and disappearing in places. He had a tyical psoriasis when shown. Attention was directed to peculiar quadrilateral lesions with parallel sides on the buttocks, and to the peculiar distribution, one side of the body being much more involved than the other.

ERYTHEMA INDURATUM, HEALING UNDER TUBERCULIN. Presented by Dr. Clark.

N. S., 20 years of age, of Jewish origin, and a skirtmaker, began to have typical lesions of erythema induratum in his right lower leg three years ago. His left leg was markedly atrophied and had never shown any lesions. The lesions developed and healed, leaving adherent scars, and new lesions appeared quite regularly. Practically all the recognized tonic and hygienic measures had been employed, together with various local applications, during more than a year, but the patient's condition seemed to be uninfluenced until tuberculin injections were instituted about six months previously, since which time he had slowly improved, and no new lesions had appeared for some time.

Dr. Clark said that this was another case in which no improvement was made until tuberculin treatment was started. In his experience tuberculin was very effective for treatment of tuberculids.

ACRODERMATITIS CHRONICA ATROPHICANS. Presented by Dr. Clark.

V. K., a tailor from Russia, aged 26 years, first noticed a whitening of the skin of the left elbow region two years previously. A little later, a similar condition was noticed on the back of the left hand. These lesions became slowly more noticeable and increased in size, but were not attended with any discomfort. As presented, the patient showed waxy, whitish transparent atrophic patches about the size of the palm, with vessels showing through prominently. There were no signs of infiltration.

ACRODERMATITIS CHRONICA ATROPHICANS. Presented by Dr. Williams.

A. C., from Dr. Williams' clinic, a woman 39 years of age, an Austrian by birth, had been married seventeen years and had one child. The duration of her illness was eight months. She was not certain of the sequence of the skin changes. The lower part of the body, from the iliac crests to the metatarsal region, was involved. The number of elements presented were such as to give the suggestion of xeroderma in some areas, with faint depressed macules interspersed on a reddened skin. There was a distinct sense of infiltration which suggested scleroderma. This character was marked at the upper limit and along the tibiae. The toes were free from lesions, and were not sclerodermatous. Two triangular areas in the groin with one side of the triangle formed along Poupart's ligament and another side by the inner limit of the thigh were entirely free of lesions and approximated normal skin. The triangle on the left side was much more marked than that of the right side. There were no other skin lesions on the patient. The absence of anetodermia did not entirely exclude the diagnosis as it might be that the duration was not sufficiently long to permit the formation of this character of the disease. The patient had recently been presented before the Clinical Society of the Skin and Cancer Hospital, where the sclerodermatous changes were thought worthy of much consideration.

DISCUSSION

Dr. Scheer said it was doubtful whether the primary condition was acrodermatitis. There was such an extensive scleroderma of the foot and thigh that the acrodermatitis might be secondary. The patient did not show an erythroderma, which was one of the cogent features of acrodermatitis chronica atrophicans. Scleroderma seemed the more probable diagnosis.

Dr. Clark agreed with Dr. Scheer that scleroderma seemed the more probable diagnosis, the lesions near the groin showing decided scleroderma.

Dr. Rostenberg thought it was acrodermatitis of not very long standing. The same patient had come six or eight months previously to the Lenox Hill Hospital Dispensary, presenting a classic picture of acrodermatitis atrophicans with sharp demarcation of the process on the buttocks and atrophy over both knees. He thought that if the case was observed a little longer anetodermia would develop and the diagnosis would be verified.

CASE FOR DIAGNOSIS. Presented by Dr. Clark.

J. K., a waiter of German extraction, aged 38 years, first began to have superficial slightly scabby lesions on the arms and trunk eight months previously. New lesions slowly developed, and the patient thought that none of the lesions had disappeared. As presented, numerous lesions were seen on the arms and body, varying in size up to a large thumbnail. Some of the lesions in the region of the elbow showed distinct scaling, were slightly infiltrated, and were suggestive of psoriasis, though they did not show minute bleeding veins when the scale was scratched off. The lesions on the body were not infiltrated, had few or no scales, and rather resembled a parapsoriasis guttata. A hurried biopsy report seemed to deny a psoriasis or lichen planus. A further report of the biopsy would be submitted later.

DISCUSSION

Dr. Highman said that as the lesions appeared at night it would be impossible to say what the condition was. The location on the upper extremities, the presence of a few papules on the knees and the thighs, together with the lesions on the buttocks and the small of the back and other lesions over the body, suggested a fading psoriasis. In addition to that there was the distinct grouping of the lesions along a scratch on the left arm, like either psoriasis or lichen planus. In his opinion it was an acute psoriasis, now waning.

Dr. Clark said he had received the biopsy report over the telephone, which said positively not psoriasis or lichen planus.

Dr. Highman replied that a negative anatomic report on psoriasis was valueless. In the first place, the biopsy might have been made from a lesion without any marked attributes; in the second place, the lesion might have been involuting when the examination was made, which would give an indeterminate microscopic picture. Of course, in the involuting stage of lichen planus there were more signs of the disease microscopically, and there the microscopic findings were of value. The microscopic diagnosis of parapsoriasis was not of much value.

MULTIPLE KELOIDS. Presented by Dr. Chargin.

E. L., from Dr. Goldenberg's service at Mount Sinai, 17 years of age, single, and a mechanic's helper, two years prior to presentation had developed acne of the indurated type which at the onset was limited to the back, but which later affected the face as well. The eruption was treated mechanically with some form of cutaneous punch. Following this treatment keloids began making their appearance at the site of the former acne lesions. At the time of presentation, more than 300 keloids were scattered over the back, upper arms, neck and upper legs. The face was singularly free of keloids, although the patient showed numerous scars; he had received the same treatment on the face that was employed for the back. The keloids varied in size from that of a pea to irregular and confluent lesions 2 inches or more in length. At another institution he had received numerous roentgen-ray treatments, apparently without any benefit.

Dr. Chargin stated that in view of some recent work reported in the literature, he had had the patient examined for evidences of hyperthyroidism, but this was not found.

SYRINGOCYSTOMA: RESULT OF ROENTGEN-RAY TREATMENT. Presented by Dr. Howard Fox.

E. W., 39 years old, a negress, born in the United States, had been presented previously (*J. Cutan. Dis.* **35**:238, 1917). She was again presented to show the result of treatment with roentgen rays, which had been applied on the right side of her chest and neck. As a result, the lesions on the chest had entirely disappeared, leaving a normal skin, which contrasted with the untreated side of the chest. She had been given, experimentally, ten roentgen-ray treatments of one-quarter Holzknecht unit (skin distance) five years ago. A small area of the left side of the chest had also been treated with an unscreened plaque of radium, with subsequent removal of the lesion, though a depigmented area of skin had remained.

DISCUSSION

DR. CLARK said he would like to confirm Dr. Fox's results by citing another case seen three years ago, which entirely cleared up.

DR. POLLITZER said that ten years ago Ormsby published an extensive case of syringomyoma which cleared up under roentgen-ray treatment.

NEVUS PIGMENTOSUS. Presented by DR. CLARK.

J. S., a young man, aged 19, born in the United States, first noticed a spotty discoloration in the left pectoral region about seven years prior to presentation. The patient was certain that the skin in that area was clear previous to that time.

The patient exhibited light brownish pigmented lesions irregularly distributed, showing intervening areas of normal skin. The lesions were not scaly, and an examination of scrapings was negative for tinea versicolor. The patient was presented because of his tinea versicolor-like appearance and history.

PSORIASIS OF THE PENIS. Presented by DR. OCHS.

D. W., 32 years old, a salesman, first noticed an eruption on the glans penis a year previously. This consisted of three rounded pea-sized, slightly elevated lesions covered with lightly adherent silvery scales. The latter were removed on bathing, leaving a reddened and glistening base. There had been no change in the eruption during the past year, and no cutaneous lesions had appeared on any other part of the body. Repeated Wassermann tests had been negative.

DISCUSSION

DR. G. H. FOX said that he hated to differ with the diagnosis. In this case he could not but admire the boldness of any one who would make a diagnosis of psoriasis based on a few scaly lesions on the penis without any eruption elsewhere. It seemed to him more likely to be a case of lichen planus than of psoriasis.

DR. POLLITZER agreed with Dr. Fox.

DR. LANE could not disprove the diagnosis, but thought that a positive diagnosis from two minute lesions on the glans was an impossibility.

DR. OCHS said that if it was lichen planus he would like to know why arsenic had not helped the condition, and also why lichen planus should exist primarily on the penis and not elsewhere—in the mouth, etc. This certainly was a unique case if it should prove to be lichen planus.

DR. POLLITZER said he had never seen psoriasis of the glans penis limited to that region, in fact it was not common in that region even in extensive psoriasis. He had, however, seen lichen planus limited to the glans penis.

DR. MITCHELL cited a case in which the lesions were situated primarily in the same region. A tentative diagnosis of psoriasis was made, and subsequent examination showed lesions on the leg which confirmed the diagnosis made on the penis. This man also might develop other lesions later.

DR. HOWARD FOX agreed with Dr. Pollitzer in regard to lichen planus. It was not a great rarity to see undoubted lesions of lichen planus, especially of the circinate type, appearing alone on the penis.

ANGIOMA SERPIGINOSUM. Presented by Dr. Ochs.

M. P., 50 years old, born in the United States, was a married woman, the mother of two living children. The eruption first appeared six years previously on the back of the left hand as a small red spot about the size of a lentil, and quickly spread over the arm and shoulder. Soon new foci appeared on the upper part of both thighs and spread upward over the abdomen and downward to the toes, so that at the time of presentation the entire body, except the face and upper part of the neck, were involved. The lesions consisted of vascular macules showing characteristic "pepper grains." The color was generally bright red, except on the lower part of the legs, where it was decidedly bluish, the venous instead of the arterial capillaries evidently being involved. The macules on the lower part of the legs had a large center of normal skin, and radiating from these centers were the new blood vessels arranged as in the spokes of a wheel. The lesions had spread peripherally, the "cayenne pepper" spots coalescing, thus forming new blood vessels. A small portion of the body remained unaffected. There were no subjective symptoms except for a slight itching when the patient was very warm.

DISCUSSION

Dr. Ochs said it seemed to him the patient was beginning to show lesions on the lower lip. The interesting feature in the case was not alone the extensiveness of the disease but the fact that the color had changed in the lower part of the leg. While all over the body there were arterial lesions, there was a venous condition on the leg.

Dr. Highman said that the case was too interesting to be passed without discussion, and that Dr. Ochs was to be congratulated on being fortunate enough to present it before the Section. The lesions on the upper part of the body represented the classical picture of angioma serpiginosum; the lesions on the leg did not—and the case brought out prominently the curious ignorance that still exists regarding the entire group of capillary diseases. Five or six years ago Stokes published an article on telangiectasis due to syphilis, and perhaps some of the things grouped under this heading may be unique conditions. Of course if it were not for the lesions on the leg, it would be a clear case of angioma serpiginosum.

In regard to the treatment, it was possible that the experience of Dr. Howard Fox and Dr. Fred Wise with the Kromayer lamp and alpine light might justify trying these measures in this case.

Dr. Howard Fox referred to a patient of Dr. Wise and one of his own who had responded in a most gratifying manner to treatment with the quartz lamps. The condition of Dr. Wise's patient had entirely cleared up at the end of a year or more, while the improvement in his own patient, when last seen, had been great. The best effects had been obtained after a severe bullous reaction.

Dr. Clark asked whether the light had been applied at a distance or by pressure.

Dr. Fox replied that it had been applied at a distance.

Dr. Pollitzer inquired about the Wassermann reaction.

Dr. Ochs replied that the Wassermann reaction was negative.

Paul E. Bechet, Secretary.

PHILADELPHIA DERMATOLOGICAL SOCIETY

Regular Monthly Meeting, March 14, 1921

JAY F. SCHAMBERG, M.D., *Presiding*

PSORIASIS. Presented by DR. WEIDMAN.

The patient, a white man, aged 33, had been under observation ten days. He had an outbreak of psoriasis with a seborrheiform distribution, the lesions being of guttate size. The case was presented to demonstrate linear lesions appearing along a scratch. There was a history of the patient receiving a scratch on the abdomen from a pin in his clothing and subsequently the disease developed along the scratch mark. The tar ointment with which the patient was treated had removed the scales, and the lesions were less conspicuous than when first seen. He was taking arsenic internally.

DISCUSSION

DR. WEIDMAN added that he had seen lichen planus and warts develop along scratch marks but he had never noted it in psoriasis.

DR. SCHAMBERG remarked that the condition was not infrequent. A few years ago he had conducted experiments along this line. Abrasions had been made in the skin and were inoculated with an emulsion of psoriatic scales. In a small proportion of cases linear psoriatic lesions developed. This was found to occur only during the evolutional stage when new lesions were appearing. In the quiescent cases the experiment did not succeed. Photographs of these artificially produced lesions were published at that time.

DR. CORSON said that judging by the appearance of the lesions in the case presented it was undoubtedly the type in which the inoculations had succeeded.

DR. HIRSCHLER asked what effect arsenic had in these cases.

DR. SCHAMBERG said that arsenic acted as a stimulant to the skin. In the inactive cases which required some stimulus to promote involution it often worked well. In those cases in which new lesions were appearing the stimulating effect caused an undesired activity in growth. This disease was the great dermatologic mystery. It had been known for 2,000 years and the etiology was still uncertain.

ICTHYOSIS HYSTRIX. Presented by DR. BROWN.

A mulatto woman, 19 years of age, was a patient in the Maternity Department of the Philadelphia General Hospital (Blockley). She presented a congenital condition from which she was occasionally almost free, due to its exfoliation. The arms from the axillae to the wrists were almost completely covered with elevated, rough, shaggy epidermal thickening. The color was dark with grayish shading. Irregular lines of fissuring ran through the area, giving a corrugated appearance. In spite of the apparent roughness and dryness, there was present a velvety texture when the hand was passed over the patch. The lower extremities were similarly affected. Keratosis palmaris et plantaris was present. The face was free, but on the forehead below the hair line, at the temples and on the scalp was a slightly raised, jet black patch with an irregular, sharply defined border. It closely resembled the appear-

ance of tar smeared on the skin and had not the verrucous character of the eruption on the extremities. Elsewhere on the trunk the usual appearance of ichthyosis was noted, the lines of cleavage marked with great distinctness.

DISCUSSION

Dr. Schamberg said it was unusual to see that amount of epithelial hypertrophy. There was no doubt as to the correctness of the diagnosis.

LEUKEMIA CUTIS. Presented by Dr. Dengler.

The patient, an Italian laborer of middle age, was brought from the wards of the Hospital of the University. The present condition began six years ago as an erythematous eruption on the neck and shoulders. Eight months later the entire body was involved by gradual extension. Six months ago the cervical, axillary and inguinal glands became enlarged. At the time of presentation there was noted a universal scaly erythrodermia. The spleen was enlarged. The superficial lymph nodes, notably the inguinal groups, stood out in relief. The temperature was 100 degrees. Nodules had appeared in the skin at times but all had subsequently disappeared. Itching was intense and uncontrollable. The Wassermann reaction was negative. A leukocytosis of 42,000 existed with 58 per cent. lymphocytes. A biopsy had been made.

DISCUSSION

Dr. Schamberg called attention to the interesting picture presented. Such an eruption might occur in mycosis fungoides, leukemia cutis, pityriasis rubra of Hebra and Hodgkin's disease. The glandular and splenic enlargement and the blood picture indicated a hematopoietic origin. It was hard to differentiate the premycotic from the leukemic type of eruption. On account of the blood findings, the speaker thought the case one of leukemia cutis. It was generally accepted that the condition known as Hodgkin's disease could not pass into leukemia but mycosis fungoides could undergo leukemic transformation. Ehrlich and Pinkus believed that mycosis fungoides, Hodgkin's disease and leukemia were closely related and belong to the same group. The evidence here favored leukemia but repeated blood studies were necessary.

Dr. Klauder suggested establishing the enlargement of the bronchial glands by roentgenogram thereby adding data for diagnosis.

Dr. Weidman said the sections made from the biopsy agreed neither with mycosis fungoides nor leukemia. Possibly this difficulty might be traced to the fact that the lesions excised were early ones. On that account it was necessary to hold the matter under advisement until further development of the disease. At the periphery of the lesions spindle cells continuous with those of the collagen bundles were noted; that is, there was present a transition from lymphocytes to spindle cells. At the margins of the infiltrate it shaded off and under the sound epidermis the lymphocytic infiltrate ceased entirely.

Dr. Schamberg concluded the discussion by adding that Douglas Simmers regarded the eruption as an effort to eliminate toxins through the skin. But in leukemia there was usually a leukemic infiltration of the skin. Roentgen-ray therapy was suggested for relief from the itching as well as a curative measure.

FOR DIAGNOSIS. Presented by Dr. Strauss for Dr. Corson.

A white boy, aged 15 years, had a curious group of small pitted scars in front of the right ear. They had been present for eight years. Either the

patient and his family were unobservant or the primary lesions were inconspicuous for there was no history of their presence. The scars were from 2 to 5 mm. in diameter and were arranged in a vertical distribution, some fifty or sixty being present. There were comedones in some of the pits; otherwise the only active lesion was the topmost one which displayed a dry yellow crust with a darker, horny, acuminate center.

DISCUSSION

DR. SCHAMBERG thought the case was an unusual type of papulonecrotic tuberculid. There must have been a preceding inflammation unless the case was one of idiopathic atrophy.

LEISHMANIASIS. Presented by DR. KLAUDER for DR. SCHAMBERG.

A white man, aged 43 years, lived in South America for ten years, returning to the United States six years ago. Seven years ago the present eruption started on the left ear; six years ago on the right one. There was present a marginated, pinkish eruption on the lobule of each ear. The surface was crusted lightly. The area involved was about the same on both sides, the entire lobule and adjacent margins of the pinna being affected.

DISCUSSION

DR. SCHAMBERG said the case was one of leishmaniasis. The appearance shown was almost a replica of that seen in other patients affected with the disease. The organism had not been demonstrated, but the results of treatment corroborated the diagnosis. New superficial ulcers had recently formed with extension of the patch. Some of the lobule had been destroyed. The treatment had consisted of intravenous injections of 5 c.c. of a 1 per cent. solution of tartar emetic given every second day. In all, five injections had been given with decided improvement in the eruption. It was thought that the disease was due to infection by an insect. Attempts to inoculate guinea-pigs and a monkey from this case had failed. In this case there had never been deep lesions but superficial ulcerations covered with a crust. The similarity to recently reported cases suggested the diagnosis. Many cases were found in South America.

DR. WEIDMAN mentioned that Patton had shown the cimex lectularius to be a spreader of this disease.

DR. CORSON remarked that the case resembled lupus erythematosus, clinically.

DR. KLAUDER brought up as of interest the fact that Donovan bodies had been found in inguinal ulcerations.

DR. HIRSCHLER asked how the intravenous injections acted. Did they make the patient ill?

DR. SCHAMBERG replied that this patient did not feel sick after the treatments. Diplococci had been found associated with the bodies, but their significance had not been worked out.

DR. WEIDMAN said that to be considered causal bodies of proper morphology should be found in the lymphocytes.

DR. SCHAMBERG concluded the discussion by mentioning that in a recent number of *The Journal of the American Medical Association*, cases of inguinal granulomas had been reported. Possibly they were cases of leishmaniasis.

ADENOMA SEBACEUM. Presented by Dr. Klauder for Dr. Greenbaum.

This patient and those in the two following cases were sent to the meeting by Dr. Greenbaum, who was unable to be present. The patient was an undersized boy, 7 years of age. The small tumors on his face had been noted for several years past. The child was an epileptic. The tumors were scattered over the forehead, sides of the nose and upper cheeks. They were bright red, quite numerous and most of them were the size of a pinhead. A few telangiectases were noted in the affected region and an angioma on the forehead. There was no discussion as the diagnosis was plainly adenoma sebaceum.

LUPUS ERYTHEMATOSUS. Presented by Dr. Klauder for Dr. Greenbaum.

A white woman, aged 29, presented an erythematous patch on the left cheek of three years' duration. On the dorsum of the fingers of the left hand, patches of a similar appearance had been present four or five weeks. The eruption was the vascular type of lupus erythematosus. It disappeared in winter and returned in the spring. On the tip of the nose and the right cheek there was a much fainter outbreak.

DISCUSSION

Dr. Schamberg warned that when the eruption of this disease spreads to parts other than the head the likelihood of a serious acute condition developing must be borne in mind. A patient of the speaker's had had high fever and a pneumonic consolidation lasting several weeks. In others an erysipeloid eruption of the face is succeeded by a pneumonic condition.

FOR DIAGNOSIS. Presented by Dr. Klauder for Dr. Greenbaum.

A colored woman of middle age presented a few pigmented spots of ten years' duration. They were each about the size of a five-cent piece. One was on the wrist, others on the legs. There were ulcers in the center and distinct nodulation was apparent.

DISCUSSION

Dr. Schamberg suggested a circumscribed prurigo nodularis and a cutaneous response to scratching. He thought that in many cases of that disease the nodules are secondary to scratching. The name lichen obtusus was once used for such a condition.

Dr. Strauss said that most of the cases described had occurred in women. In this case there had never been more than half a dozen lesions.

Edward F. Corson, M.D., Secretary.

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